

HISTORY OF MANKIND
CULTURAL AND SCIENTIFIC DEVELOPMENT
VOLUME III
THE GREAT MEDIEVAL CIVILIZATIONS
PART TWO: SECTION TWO
PART THREE

HISTORY OF
MANKIND
CULTURAL AND SCIENTIFIC
DEVELOPMENT

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THE GREAT
MEDIEVAL
CIVILIZATIONS

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SECTION 2

RELIGION & PHILOSOPHY; LAW & POLITICS

CHAPTER VIII

THE CHINESE WORLD

THE major religious phenomenon for the majority of eastern Asia during the fifth century was the advent of Buddhism in China. At that time and for a period of one century, China and India communed in the same faith, but as from the sixth century the Indian world abandoned Buddhism, while the Chinese world continued in the new religion alone. In the ninth century Buddhism suffered a second reverse; whereas conquering Islam absorbed the subjects of central Asia, China herself, followed by Korea, abandoned it and published the severe proscription of 845. Only two bastions remained to it—Tibet, where the reformed church of Lamaism spread out in the north, conquering the Sino-Mongolese territories, and Japan, where the political authorities applied themselves to keeping the Buddhist faith alive. (Map XXII.)

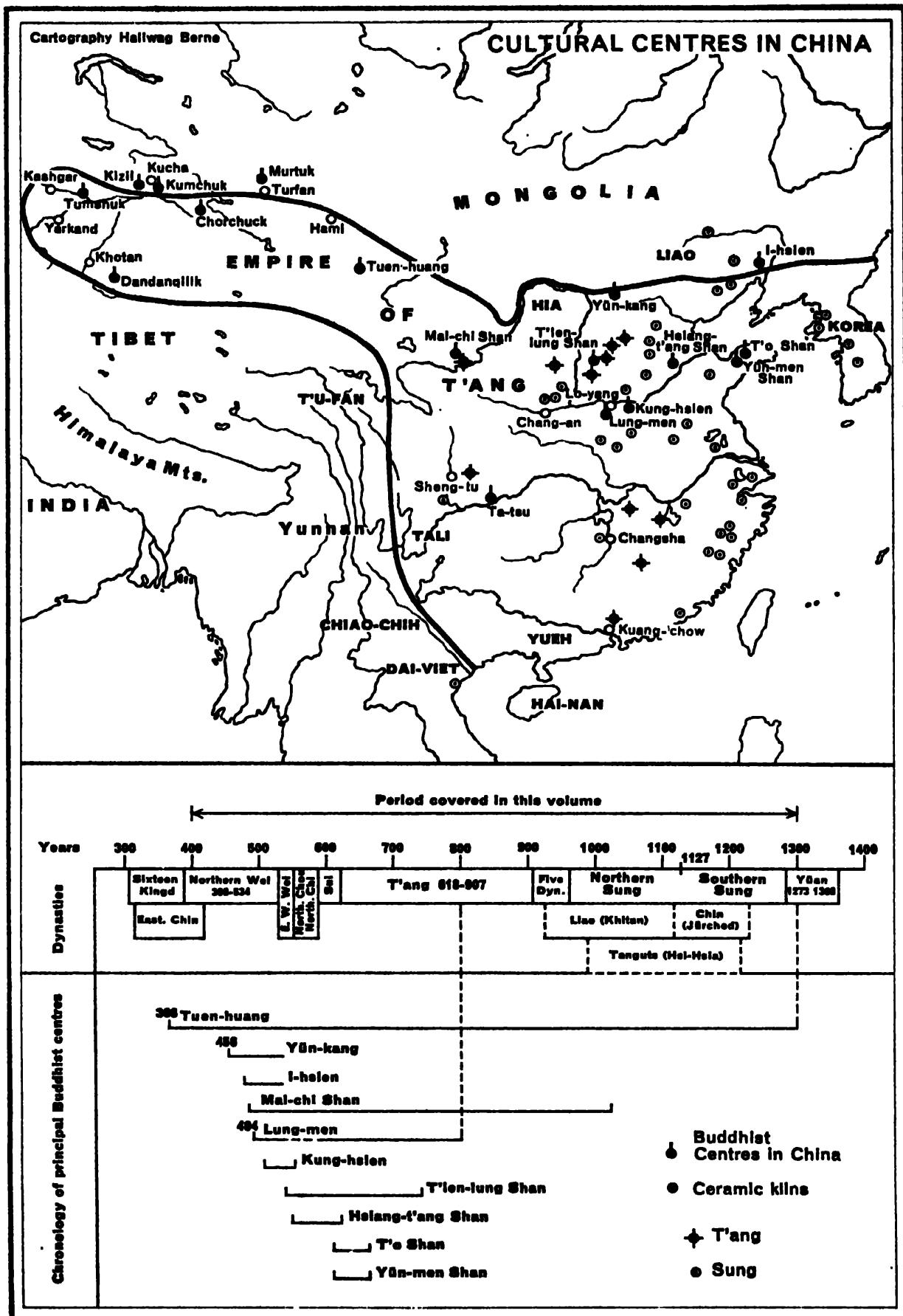
I. RELIGIOUS PRACTICE IN THE CHINESE WORLD

In the mind of a Chinese brought up in accordance with Confucianist principles, life depended on the cosmic equilibrium which the conduct of the emperor ensured or jeopardized. The emperor governed by virtue of a mandate from heaven, thanks to which he ensured balance and harmony between the celestial and terrestrial worlds. Heaven was considered sometimes as evidence of a cosmic order concerning which thinkers made dissertations, and sometimes as a supraterrestrial reality, the image of which was a comfort to ordinary mortals. These two attitudes illustrate the poles between which religious activity evolved; the range between the two covered the most widely varying conceptions of life.

Initially, there was a division into two groups—the traditionalist Confucianists and the neo-Taoists. Thus it was that Buddhism subsequently encountered two primary social groups—the masses subject to Confucianist traditions and those attracted by Taoism.

The traditionalist Confucianist, the majority of whom were state officials, protested against superstition, although without explicitly rejecting the other world, where they hoped to rejoin their ancestors after death, for the ceremony of the cult of the ancestors took the place of religious activity for all those who wished to be loyal to the tradition of Confucianism. The neo-Taoists included the aristocrats and the aesthetes. This élite, which was deprived of power and felt frustrated, attempted to commune with the cosmic infinite by means of the joys of dreams and ecstasy.

The masses, subject to Confucianist tradition, were scarcely able to penetrate



MAP XXII

the sense of the classics (*king*), unlettered as they were. Memories of the Golden Age meant little to them. What counted for them was their daily life and their poverty, to which a celestial change could bring consolation and remedies or revolutionary change from below, requital and reforms. To calm their impatience, they put their trust in fortune tellers, seeking in the interpretation of the *Book of Mutations* (*Yi king*), the hope of a speedy improvement and practical advice for the immediate future. Moreover, wide sections of simple people took advantage of Taoism without any more comprehension of the subtleties of the neo-Taoists than the others had of the teachings of Confucianism. Thus, fluctuating between the reason of the Confucianists and the Utopia of the Taoists, but accepting subjection to the superior forces of the same Destiny, the people led a life fully impregnated with fatalism.

The neo-Taoists included a number of convinced alchemists who, in spite of repeated setbacks, never abandoned hope of finding the Elixir of Eternal Life. At least their work had the merit of providing the basis for numerous discoveries and of planting important landmarks in the development of techniques and sciences. Other Taoist adepts were only concerned with prolonging their earthly life. Despairing of attaining the immortality of which the poets sang, they devoted themselves to health practices which made athletes out of them rather than believers.

Initially, the Taoist adept believed that his being contained three vital centres or 'Cinnabar fields' (*tan t'ien*) and that 36,000 'gods' constituted his microcosm which was threatened by what he called the 'Three Worms'—disease, old age and death. It was therefore necessary to purify the 'Cinnabar fields' by feeding the 'gods' and eliminating the 'worms'. In order to do this, it was sufficient to feed the Mind and the Body. In order to feed the Mind it was necessary to enter into relation with the gods by an interior vision which would contribute to the mystical union with *Tao*. The preparation for this vision was a pure and healthy life which would result from the codification of the acts of daily life. This was, of course, a difficult road to follow, and soon the adepts found that they preferred confining themselves to the feeding of the Body. They soon gave up the drugs of immortality and adopted diets, abstaining from wine and meat, which were harmful to the 'gods' and also abstaining from the 'Five Cereals' of which the 'worms' were so fond. In addition they practised exercises in holding the breath (*pi-k'i*) which they associated with sexual practices connected with the derivation of the sperm (*huan tsing*) with a view to ensuring the union of the two supreme foods. Over the centuries, therefore, the Taoist passed from mysticism to magic and on to hygiene.

In the fifth century the Taoists organized great collective religious manifestations. During assemblies and banquets devoted to exorcism and propitiatory rites, the observance of salutary moral rules ensuring peace-giving mental stability was extolled. Such meetings could also give rise to sexual orgies justified by the quest for the union between Yin and Yang—complementary in their masculine-feminine aspect—and internal hygiene cults.

As we have seen (cf. p. 93), the Taoist communities had found it easy to adopt Buddhistic ideas thanks to the superficial assimilation of the fundamental terms and the equivalence of certain moral principles and dietetic practices. In the fifth century there developed as an imitation of Buddhism a vast Taoist pantheon presided over by a Triad and consisting of Immortals and historical personages. Gods personified nature and the abstractions, as for example *T'ai Yi*, the Great Unity. The Immortals assumed responsibility for instructing the faithful; this was the case with the legendary Emperor Huang-ti and Lao-Tsu, the founder of Taoism, who soon became amalgamated into a 'Huang-lo', and with the Celestial God of the Original Commencement (*Yuan che T'ien tsun*) and his representative, Yu-huang, emperor of Jade. Lastly, the Instructors (*tao-che*) guided the faithful by giving them sound advice.

The Taoist faithful willingly paid the taxes imposed on them and bore all the expenses of their parish. From this they derived a considerable degree of political independence and a liberty of action which gave rise to revolts. Things were very different with the Buddhists; the Buddhistic communities in general only existed by virtue of rich endowments, and their standard of living, which was often luxurious, depended as much on the prosperity of their property as on their relations with the rulers.

By firmly taking root, Buddhism imparted to the ancient Chinese structures a particular character which, incidentally, contributed to its downfall.

For the original Buddhists, life was nothing but suffering, as a result of our actions and their succeeding retributions. It was necessary to escape from the cycle by so ordering one's life that desire was extinguished; hence the quest for a saintly, moral life full of those acts of grace which led to Illumination by way of purification. During this ascent the Chinese appealed for the essential assistance provided by the future Buddhas or bodhisattvas, the worship of whom, which was soon extended to the Buddhas of the Past and the Future, resulted in the formation of an extensive pantheon of protective and healing gods, who were the objects of adoration and faith.

Public worship took place in the temples, which were faithful reproductions of the Imperial palaces and government buildings (*yamen*). The faithful, first received by the Keepers of the Doors of terrifying aspect, then reassured by the sight of the benevolent divinities, could finally contemplate Buddha, recite a prayer and invoke his help. They used the same procedure for addressing a petition to a government official, with the same devotion and the same presents. The latter were the essential part of the procedure, for it was the gift which constituted the acquittance for both moral and material debts. Such gifts were not merely destined to provide for the needs of the clergy and the community, as elsewhere they were of a redeeming nature because they were disinterested, the fruit of sacrifices similar to those performed by the bodhisattva in giving himself up body and soul to assist the salvation of his equals. The gifts could be either in cash or kind—miscellaneous offerings such as

buildings, land, money—or might consist in a sacrifice of mutilation or even suicide; thus, Huei-shao, in 451, burnt himself on a pyre, and Huei-Yi, in 463, had himself boiled in a caldron full of oil before a multitude of lamenting devotees.

The exaltation propitious to such gifts was inspired during the feasts which constituted the true religious activity. For Buddhistic life was a succession of festivities—ceremonies during which collective acts of contrition and scenes of mutilation united priests and faithful in communion. Peasant feasts and Taoistic practices were already cluttered up with festivities, but these, which were of a local and popular character, could not give rise to a ceremony adapted to the customs of the court. The Buddhistic festivities, with their daytime and nocturnal processions and its protectors rivalling one another in splendour, were a reproduction of popular traditions on an infinitely grander scale. They were the occasion for a great display of wealth and pomp. Places of worship became increasingly grandiose—the T'ang Empress Wu-heou even proposed to erect a Buddha 300 metres high—and everyone participating in the festivity received a share of the profits. Unlike the Taoist feast, which was a ceremony for the initiated, it associated the emperor, the aristocrats and the ordinary people. This democratic aspect, added to the spectacular aspect, exerted an undoubtable attraction on the masses.

The spirit of these festivities was also to be found in the pious act par excellence of everyday life—the banquet (*chai*). It was distinguished from others by being vegetarian, but, like all Taoist activities it was achieved by individual contribution to the common expenditure. Generally, there were six small banquets a month and three large annual banquets. Such meetings were also designed to foster collaboration between the lay population and the priests. The latter contributed their advice and assessed the amount of gifts in accordance with the recompenses and indulgences sought by the giver.

Gradually, under the influence of Mahāyānistic tendencies, the virtues of mutual aid were substituted for individual effort. Egoistical contemplation gave way to charity; the part played by the monks and asceticism diminished. As the act of faith alone became operative, religious discipline relaxed. It was even noticed that disorderly monks indulged in vile, indecent practices under the pretext that nobody knew where holiness was hidden.

As magicians, tricksters and miracle workers, they were to be found everywhere appealing to the curiosity of passers-by. But at the same time that the level of the lower clergy was falling, the rôle of the religious associations (*tche*) which were bound together by personal links increased. These created an efficacious social solidarity, foreshadowing the future mutual assistance and financial associations.

At the beginning of the eighth century, Buddhism had won over the masses by a social liberation of the individual which put the sovereign and the ordinary man on the same footing, and also by the substantial advantages in the way of assistance and protection which it provided for them. But although

they remained attached to the faith and its benefits, they took no interest in doctrinal disputes and philosophical theories. These were a matter for the real clergy—monks and religious thinkers; and enlightened laymen—ambitious officials or those anxious about maintaining the unity of power.

In spite of its practically complete pre-eminence, Buddhism did not prevent the development of other foreign religions, particularly as from the time of the T'angs. The cosmopolitanism of that great dynasty is illustrated by the spread of Mazdaism and the cult of fire which undoubtedly reached China in the sixth century. The presence, at that period, of Iranians at the court of the northern Weis had already justified the appointment of a religious chief of the Zoroastrians (*sapao*) to Liang-tcheu. Under the Suis a *sa-pao* held office in the capital, but the Chinese reproached the Zoroastrians with indecent conduct; no doubt this was an allusion to the incestuous practices of the Iranians of that period, and exotic rites which were contrary to Chinese habits. It was also under the T'angs that the Sogdians, vassals of the powerful neighbouring Tu-kiu, introduced Mazdao-Christian Manichaeism among the Uygurs. Moreover, a stele dating from 781 reminds us that Nestorianism was also flourishing at that time. Judaism remained the religion of a few isolated communities, while Islam was conquering large stretches of territory in the north-west (Kansu) and the south-west (Yunnan) and in the large ports of Canton and Ts'i uan-chow. The proscription of 845 applied both to non-Buddhists and Buddhists. The Nestorian and Mohammedan priests, therefore, had to leave the Empire, and although there was a respite under Siuan-tsung (847-59), those faithful to foreign religions soon suffered persecution or massacre. Tolerance returned with the Mongols, who opened their doors to all missionaries, particularly to Catholics who were attempting to make contact with the Christian communities of Nestorianism.

2. THE BUDDHISTIC RELIGIOUS THINKING OF THE CHINESE

Religious thinking was dominated by the study of the Buddhist texts. It had taken the Indian monks many centuries to elaborate and compile them, but they arrived in greater volume, and sometimes pell-mell, on the tables of the valiant translators during the course of a few centuries (cf. p. 437). These texts took the form of collections of the teachings of Sakyamuni during his forty years of preaching. The Chinese love of classification gave rise to the desire to arrange all these Holy Scriptures in a proper order. Thus, each could select the text he preferred, give it pride of place, and classify all the others in such a way as to justify his choice. These various classifications resulted in the emergence of truly Chinese Buddhist sects during the period from the fifth to the eighth century.

These reacted against the interest usually attached to the ostentation and material advantages of the religion, and insisted on the importance of contemplation and religious practice. Such was the case with the monk Hui-sseu

(515-77) and his disciple C-h-i-y-i (died in 597) who founded the *T'ien-t'ai* (Jap. *Tendai*) sect (cf. p. 60). The latter, while criticizing the excessive intellectualization of the Buddhist doctrinarians, protested against the lack of dogma among the faithful and hoped to merge harmoniously the teaching of all Buddhist sects, and thus eliminate the antagonism between Hinayāna and Mahayāna. He adopted as the basis of this reform the text of the *Lotus of the Good Law* (*Saddharma Pundarika*—or *Sūtra*) and took over the ideas of the great Mahayānist teacher of Nāgārjuna (second century), translated in the fourth century by Kumārajīva (d. 412, cf. p. 496), according to which everything exists in close interdependence and is therefore empty; although not real in substance, things are not non-existent, since they exist temporarily, emptiness and temporaneoussness, are neither exclusive nor independent of one another, and being neither negation nor affirmation they define the principle of a relative, a middle course; thus was founded the Threefold Truth, one of the chief doctrines of *T'ien-t'ai*. Since all phenomenal differentiations are justified, daily life is one aspect of the way leading to Buddhahood.

While the *T'ien-t'ai* sect followed the work translated by Kumārajīva, the Fa-hsiang (*Hosso*) sect based its thinking on the ideas brought back by Hsuan-tsang (602-64) who had studied the thoughts of Asanga and Vasubandhu in India. His return (cf. p. 107) marked the beginning of an Indianization of Chinese Buddhist thinking. The text adopted was that of *Sūtra of the Perfection of the Gnosis* (*Prajnaparamita Sūtra*), a short summary (*hrdaya*) of which, well adapted to everyday use, was published. According to this philosophy, all phenomena were products of the consciousness, and it was therefore sufficient to understand that the Ultimate Truth proceeded from a knowledge of all its manifestations, in order to progress along the path of Illumination. This psychological and rational attitude did not, however, attract Chinese thinkers, and the sect confined itself to phenomenological studies.

Another aspect of Indian thinking was developed by Fa-tsang (643-712), founder of the *Hua-yen* (Jap., *Ke-gon*) sect of the name of the *Avatamsaka Sūtra*. His doctrine affirms that all beings participate in Buddha and that their very nature should lead them to Illumination. This text was accepted by all the Chinese Buddhists, who also derived from it the prescriptions of vegetarian dietetics. Fa-tsang rejected the chronological classification of the texts established by *T'ien-t'ai*. For him, the value of the texts did not depend on the period when they were written but on their situation with reference to the development of the theories. The last stage was that attained by the *Avatamsaka Sūtra*, according to which all phenomena are entire: each experience contains all experiences, like the diamonds fixed to a net, which all reflect one another.

These sects demonstrated the efforts made by Chinese Buddhists to avoid the negation of substance, no matter how much such negation was prized by the Mahayanists, and attain the affirmation of concrete reality; from this point of view the sects were specifically Chinese.

Three other sects had a greater vogue because they appealed to ideas

familiar to the Chinese. First of all, there was Tantrism, the esoterism of which was as much in line with Indian as with Chinese taste. Since the seventh century, Tantrism (*Vajrayana*), charged with superstitious beliefs and popular magic, had been known to the Tibetans. The ritual was abundant and highly complex, mysterious and fantastic elements, using numerous symbolical diagrams and correspondences (*mandala*), being predominant. As opposed to the gentle mysticism of its origins, there were the strict rites observed towards divinities who, though benevolent, were of terrible aspect, with numerous arms and legs and with fierce faces, many heads, or heads in the shapes of animals or monsters. The union of the male (*yab*) and the female (*vum*), symbol of spiritual communion with the divinity, also played a very important part. Introduced at Chang-ngan shortly after 712, Tantrism was adopted by a court thirsting for novelties. The efficacy of the gestures and the power of the words preached by the new sect found an echo in the talismans and amulets with which the anxious sovereigns liked to provide themselves. The notion of a god uniting himself to his feminine counterpart (*shak-ti*), whence he drew his strength, was a reminder of the Taoistic unions of the Yin and the Yang. This sect had the name *Chen-yen*, the 'True Word' (Jap. *Shingon*), since it taught that the word is a seed from which the divinity springs. Letters (*bi-ja*) were also attributed to the Five Cosmic Buddhas, among whom Vairocana was supreme. The sect remained above all attached to ceremonial and the proper execution of the rituals; in spite of its concern for efficacy, the complexity of the iconography and the high degree of technical specialization it demanded did not attract the masses.

The latter were more susceptible to the charm of the Sūtra of the Pure Earth (*Sukhavatiyuha Sūtra*). The Pure Earth sect (Chin. *Tsing-t'u*, Jap. *Jodo*) which claimed kinship with Hui-yuan (334-416) proclaimed the omnipotence of the one act of faith and of the one invocation in the name of the Buddha of the Future, Amithaba (*A-mi-to-fo*, Jap. *Amida*). It was to T'an Luan, a scholar of the sixth century, that was due the drafting of the basic text, *Notes on the Treatise on Rebirth in Paradise*. Soon, the feeling spread that political troubles were revealing the instability of the world and that the 'Last Day', which was to mark the 15,000th anniversary of Buddha, was approaching. Then it was that the monk Sin-Sing (540-94) recommended equal devotion to different Buddhas. But it was only under the T'ang dynasty that Chan-tao (613-81) imparted a definitive form to this doctrine. According to it, the sinner on this earth cannot rise again; his only hope of salvation is to believe and live in Amithaba, who has made a vow to save him. He is like one walking along a narrow path with flames on both sides, to whom the Buddha Cakyamuni cries from behind: 'Go on!' and the Buddha Amithaba cries from in front: 'Come on!' The act of faith of the *Tsing-t'u* was adopted by other sects like those of the Hua-yen, the T'ien and the Ch'an; thus it was that the name of Amithaba resounded throughout all the temples.

The last important sect, and the one which left the deepest impression on

Chinese, and above all Japanese, life, was that of Dhyana or Meditation (*Ch'an*, Jap. *zen*). This sect, which adopted the principle of meditation as it had been revealed to the Chinese by the translator Tao-ngan in the fourth century, recognized as its founder Bodhidharma, who is supposed to have lived in the sixth century and remained seated meditating in front of a white wall for nine years, until, so the story goes, his feet became atrophied. With its teaching of the immediate apprehension of truth and of meditation resulting in sudden illumination, this sect is a specifically Chinese reaction to the problem of salvation. Everyone has the Buddha-nature in himself, and all he needs to do is to find it. Basically, this was the old quest of the Taoists and their mystical voyage in search of internal gods; it was also the attitude of the scholars seeking a simple, rustic life through reclusion and concentration. As for the teaching, it was based on paradoxes aimed at disturbing the mind and making it break away from its habits of logic. The *Ch'an* sect, appealing to the same sources of Chinese thinking as Taoism, was accepted by all people thirsty for fresh air, freedom and spontaneity; it inspired the poets and painters who, with a rapid, impetuous movement, revealed their message and the cry of their souls.

3. DECLINE OF BUDDHISM IN CHINA AND KOREA

Buddhism, as a result both of its practices and theories, had penetrated into all social strata but found itself engaged, particularly as from the eighth century, in a politico-social intrigue which resulted in its decline.

While the sovereigns found it difficult to do without the Confucian scholars, who were qualified specialists in the management of public affairs, the opponents of the régime and the intriguers were happy to find allies among the votaries of a religion, the economic repercussions of which enriched them and increased their power. Moreover, as against the Confucian education of the men there was the Buddhist education of the women; it should be remembered that the nuns often provided concubines and favourites and that the monasteries could thus be used as a refuge by the latter. Buddhism, assisted in its purpose by the eunuchs, had conquered the gynaecums and the uterine branches of the Imperial family, which explains the reticent attitude of the Confucianist. The latter, however, although opposing Buddhism in the political and economic spheres (cf. p. 107), raised no protest whatever concerning its welfare activities and moral teachings. There was nothing but advantage in the existence of mutual assistance associations and prescriptions of goodness and charity. It was, therefore, in order to destroy the harmful effects and not the spirit of Buddhism that the Confucianists persuaded the emperor to issue the edicts of the proscription of 845. The dream of the scholars was not to suppress Buddhism but to functionalize it so that it could be used solely for the benefit of the state instead of acting as cover for political pressure groups. The edicts spared a few monasteries in the large cities, and

the Buddhist clergy did not entirely disappear. In the ninth century the system of patronage upon which all Buddhistic activity had been based was replaced by new relations between employer and employed to which Buddhism was unable to give any support.

For the faithful, Nirvana and Tao tended to merge into an image of an after-life which was infernal or paradisal according to the judgments pronounced by the gods, who, rather like government clerks, kept account of good and bad deeds. At the end, as at the beginning, popular Buddhism and Taoism, deprived of the support of a canonical upper clergy, had the same mythological beliefs and the same superstitions, and revived the same rites.

In Korea, Buddhism followed the fortunes of the relations maintained between that country and its powerful neighbour. The spread of the T'ang dynasty into the united kingdom of Silla (688–935) resulted in numerous exchanges of monks. A special destiny was reserved to Weon-hyo (*fl.* 650), whose work was as much appreciated in Korea, as the founder of indigenous Buddhism, as in China and Japan. Refusing to go to China, he devoted himself to a study of the sects in his country. He directed his efforts towards the search for a unifying principle for society and the nation, considering that religious life should impregnate all facets of life in order to serve concord and peace. However, this 'involved' attitude did not hinder the development of the more or less adapted Chinese sects. In the eighth century the sovereigns, in their capital of Kyongju, imitated Chinese achievements; towns and country were covered with temples, stone pagodas and monasteries, like those of Pul.kuk.sa, with their characteristic Indian features, and Sok.Kul.am, with the giant Buddha and magnificent bas-reliefs.

The Koryo dynasty (935–1392), a faithful supporter of Buddhism, associated the religion with its government and, as happened in China, the church conquered an important place in the economy of the nation. The monasteries constituted powerful intellectual centres where teaching of the Chinese sects was developed. For example, Ch'an (*Seon* in Korean), which had been adopted under Silla, became widespread in the twelfth century thanks to the efforts of the monk Chinul and the adaptation of various elements proper to the Hua-lien T'ien-t'ai and Tsing-t'u sects. This Buddhism absorbed the entire religious life of the Koreans, but managed to escape from the worst results of the Chinese proscription of 845; on the other hand, the wave of Confucianism put a considerable brake on its activities which, in any case, practically ceased in the fourteenth century with the advent of the Yis, who, like the Chinese Mings, were captivated by the traditionalism of the scholars.

4. DEVELOPMENT OF BUDDHISM AND ZEN IN JAPAN

In Japan, the new religion, after certain initial difficulties in the sixth century, did not experience the fatal proscription, and its history is one of unbroken development. The local religious basis of Shintoism (cf. pp. 120–2) was rapidly

outflanked, though not entirely supplanted. In imitation of Taoism, though without its social and intellectual level, it adopted Buddhistic practices without, however, constituting a noteworthy indigenous counterpoise. The ordinance of Prince Shōtoku, dated 594, enjoining the adoption and practice of Buddhism, imparted to it at the outset a national and imperial character. Buddhistic temples and edifices were erected in homage both to Buddha and to the Emperor and his ancestors, thus reinforcing the loyalty of the subjects. Prince Shōtoku's prescriptions made no distinction between religious life and lay life and did not bind the faithful to celibacy, which allowed of the practice of the new religion in the family circle—a characteristic aspect of Japanese Buddhism.

The great centre for the diffusion of Buddhism in the eighth century was Nara. It was there that the texts were translated, and it was there that the great ceremonies such as the *Urabon-e* were organized. The latter, accompanied by singing and dancing (*Bon*), developed the feeling that the feast was devoted to the consolation and homage due to the spirits of the defunct parents. Under the influence of devout sovereigns, Buddhist life became merged with Imperial life. Services, teaching and ordinations were controlled by the court, which officially recognized two minor sects (*Fojitsu* and *Kusha*) and four major sects—the Chinese *Sanron* (*San louen*), *Hosso* (Chin. *Fa-hiang*), *Kegon* (Chin. *Hua-yen*) and *Ritsu*. Apart from the last-named, these sects had been imported by Japanese monks who had studied in China and preached the original doctrines.

The Hosso sect, introduced by Dosho in 660, introduced cremation into Japan. The human being was composed of earth, water, air and fire, and should be returned to these elements after death. The spread of this custom was greatly favoured by the fact that cremation expenses were not very high and that it was not necessary to build costly tombs and mausoleums. The interest taken in welfare activities by this sect was illustrated by Gyogi (670–742) who went out into the highways and byways in order to help build bridges and dykes, rest houses and temples, thus earning for himself the exceptional posthumous title of Bodhisattva. A profound impression was left by the prescriptions of the sect regarding the sacred obligations of filial piety: Zenyu preached the abandonment of family vengeances and vendettas and extolled universal charity.

The *Ritsu* sect placed the accent on the codes of discipline (*Vinaya pitaka*) governing the ordination of priests and the behaviour of parishioners. Its foundation in the eighth century made up for the lack of masters qualified for the proper execution of ceremonies. The Chinese monk Kien Chen (688–763) (Jap. Ganjin), who was asked to come and re-establish monastic discipline, founded the Toshodaiji, which remained the instruction centre for sound Buddhistic practice. The rules laid down there went beyond the mere organization of the rites and also gave practical instructions. Placing the accent on respect for the master, they state how one should behave at table, how the

places should be set for a meal, and what to do on meeting in the street. All these good manners result in precepts which constitute the basis—and reputation—of Japanese politeness. So far as the official religion was concerned, a large Buddha Cakyamuni was to be placed in each of the sixty-four State temples distributed throughout the provinces and small Buddhas in the others. Nara, the capital, benefited from the protection of the Buddha Maha Vairocana. This Buddha was the master of thousands of Great Buddha Cakyamunis, who appeared in each of the ten milliards of worlds of which the earth is only one unit. This infinite number of Buddhas reduced each world to such small dimensions that the merits of greater or smaller nations became equivalent. The feeling of belonging to a universal hierarchy on the scale of this colossal pyramid of divinities swept away any inclination there might have been to contest the legitimacy of Buddhism—the state religion.

The desire to escape from the control of the religious chiefs decided the sovereign to leave Nara and set up court in Kyōto; it was also undoubtedly at the origin of the support given by the court to the emergence in Japan of two sects which were very popular in China at that time—the *T'ien-t'ai* (Jap. *Tendai*) and the *Chen-yen* (Jap. *Shingon*). But the latter were not always subservient to the central authority.

For Saincho, the founder of the Tendai, had added to the teaching of the *T'ien-tai* esoteric elements which he had studied in China; this heterodoxy made many difficulties for him in connection with the ordinations which the emperor intended to reserve for himself, for the priests were ordained in accordance with the precepts of the Little Vehicle, whereas the Tendai belonged to the Great Vehicle. Saicho then invoked common sense, saying that rules formerly laid down in India could not be applied literally in Japan a millennium later. Just after Saicho's death in 822, the Emperor finally authorized the establishment of a place of ordination at Mount Hiei. Thus, the Japanese attitude to the Indian and Chinese teachers had changed. While they were still respected just as much, they had necessarily been adapted.

Unlike Tendai, the Shingon sect included only esoteric beliefs. Its founder, Kukai or Kobo-Daishi (774–835), versed in Confucian and Taoist studies, had been attracted by Esoterism during his stay in China. Since his syncretic thinking embraced all the teachings of the other doctrines, he classified each sect by level of education, making of his own the loftiest expression of thought and the most effective instrument of salvation. As in China, the sect rapidly degenerated owing to the amount of magic ritual based on superstition.

Under the Fujiwaras, Buddhism did not suffer any eclipse as it did in China in the ninth century; neither Confucianism nor Shintoism opposed a supremacy which lasted for centuries. However, Buddhism gradually departed from the original thoughts and increasingly concentrated on elaborate ritual practices on the one hand and the assimilation of local gods on the other. This popularization was accompanied by political considerations. The monk Genshin (942–1017), for example, introduced the notion of 'degenerated

times (*mappo*)' during which a way should be sought in simpler, more direct and more generous doctrines. The notion of salvation only in Amida invaded all Japanese Buddhist thinking, which delighted in the description of paradises and hells.

The religious authority split up into fragments, each conforming to the geographical boundaries of the fief of a rival lord. Religious disputes engaged in by soldier monks often assumed the embittered character of a civil war, as shown by the expeditions launched by the Tendai monks; they swept down from Mount Hiei and attacked the supporters of the Jimon branch, menacing their rivals and burning the headquarters of Miidera. The savagery of these methods of paying off scores was only one aspect of the violent antagonisms which threatened the authority of the Fujiwara regents in an atmosphere of drama suitable for accentuating the vigour of the faith. With the establishment of the Shogunate of Kamakura a wind of simplicity and liberalization blew over Japanese society. Of course, the warriors still occupied the leading place, but they brought with them a whole crowd of unpretentious people who revolutionized the aristocratic habits of the past. Religious leaders were no longer courtiers; many of them had come from the common people and took an interest in their well-being which had been rare in the past. A spirit of equality came to light and embraced both rich and poor and both men and women. Three new schools participated in this new movement: the amidism of Honen, the Nationalism of Nichiren and the Zenism of Eisai.

Amidism had already infiltrated into the Buddhism of Nara, and the Fujiwaras had been well acquainted with the precepts of the Pure Earth *Jodo* (Chin. *Tsing-t'u*), but the sect itself owed its existence only to Ryonin (1072–1132), a disciple of Genshin, and to Honen (1133–1212). The latter taught that salvation depended exclusively on the invocation 'Homage to Amida Buddha (*Namu Amida Butsu*)'. His doctrine could do without temples, priests and rituals. He clashed with the clergy and the court of Kyoto; he was exiled in 1207, and his disciples were condemned, and sometimes even executed, over a certain period. One of them—Shinran (1173–1262)—taking advantage of the new political climate of Kamakura, went one better than Honen and proclaimed that a single sincere invocation to Amida alone sufficed. He thus founded the Amidism of the Shinshu or the True Sect of the Pure Earth. This single act of faith was manifested in iconography by the immense popularity of the descent of Amida (*ra igo*) where the Saviour, invoked perhaps for the first time, and certainly the last, by a dying man, comes to seek him. The community of life between the clergy and the lay population, and the simplicity of the duties involved, helped to spread widely the doctrine of the new monotheistic Amidism.

But other thinkers were concerned with the wretched conditions prevailing and remain unsatisfied. This was the case with Nichiren (1222–82), a fervent admirer of Sakyamuni and a strict observant of the 'Lotus of the Good Law (*Saddharma pundarika sutra*)'. It is in this text that the notion of the decline

(*mappo*), which had already been introduced by Genshin at the end of the tenth century, appears. Nichiren violently opposed the degeneracy of ancient Buddhism and demanded a return to the teachings of the sutra of the 'Lotus of the Good Law'. This gave rise to a wave of protests on the part of other sects; he was condemned to death, and was only saved by a flash of lightning which came at the moment when the sabre was about to descend on his neck. He was banished, but nevertheless remained militant in the service of the faith. Nichiren's strong personality, his courage and his misfortunes made a wide impression. He became a living example of serenity, joy and the loftiness of spirit imparted by the practice of true Buddhism. He himself practised the exclusive adoration of Cakyamuni, the eternal Buddha, the Supreme Being who constituted the centre of his diagram of the Great Mandala. He insisted on the importance of uniting words with intentions and thoughts in prayers and invocations, and on the profound devotion which should accompany the act of faith. His ethical principles referred to the same Sūtra of the 'Lotus of the Good Law', recommending the repetition, throughout an upright life, of the prayer 'Homage to the Sūtra of the Lotus of the Good Law (*Namu Myohorengekyō*)'. His conviction that Japan ought to be the centre of a restored Buddhism, and his confirmed predictions, particularly that of an invasion by the barbarians, contributed to making him a protector of the nation and turned the feelings of his admirers towards a nationalism which imparted to his Buddhism a considerable share of its originality.

The third sect of the age of Kamakura, that of Zen, was to have an even greater and more lasting future. Derived from the Chinese Ch'an (pp. 496-7) and impregnated with the most ancient traditions of individualism, it was destined to be more suited than any other to the production of men of action to which the Government of the Shoguns gave rise. Here, as in China, the teaching was based on the paradox (*Koan*); the ritual included recitations of the Sutra and of prayers for the dead, meditations (*zazen*), and alimentary and physical rules. Eisai (1141-1215), bringing back to Japan the fruit of his experience in China, placed the accent on oral teaching and paradoxes; he founded the Rinzai branch of Zen. His disciple Dogen (1200-53), more of an individualist than his master, gave precedence to the meditation which characterizes the Sodo branch of Zen. But both branches also retained the spirit of Ch'an, its strict personal discipline and its severe way of life, its liberating faculty of giving free play to inspired gestures and its power of penetrating through reflection into all the acts of daily life. Zen, during the following centuries, combined Indian intellectualism with Chinese pragmatism and Japanese emotiveness, thus becoming a philosophy and a way of living.

By successive stages of impregnation with the Chinese and Japanese characters during its evolution, Buddhistic thinking left its mark on the lives of the two nations; it constituted an incomparable source of enrichment as the leaven of magnificent artistic and literary achievements.

5. BUDDHISM AND CHINESE PHILOSOPHY

The entire philosophical thinking of the Far East from the fifth to the thirteenth century was dominated by penetration by and assimilation of, Buddhistic ideas. China imposed herself in this connection as the thinking master, and her national reactions governed the Far Eastern evolution of this philosophy, which the Koreans and the Japanese adopted and modified according to their own temperaments. The considerable differences in adaptation were revealed by the foundation of a thousand different religious sects. However, two ancient influences mingled with the mainstream of the development of philosophical thinking with the awakening of Taoistic gnosticism in the third and fourth centuries and that of Confucianism as from the eighth century; the former resulted in Ch'anism and the second in neo-Confucianism.

The philosophical movement in China at this epoch (fifth to eighth centuries) can be illustrated by the discussions which led the way to Ch'anism. This partly sprang from the ideas expressed by two disciples of the Great Kumarajiva (344-413)—Seng-chao (384-474) and Tao-sheng (c. 360-434) who perhaps followed in the footsteps of the translator Chou Fa-hoo (*fl.* 265-308) and the philosopher Che Min-tou (*fl.* 300-30), who in turn had already grafted Indian conceptions of Mahāyānism on to the stem of the frequently similar beliefs of Chinese Taoism.

It was from the end of the Han dynasty that began the great philosophical awakening and the Gnostic movement illustrated by the 'School of the Arcana (*hsuan-hsueh*)' and especially the philosophers Wang Pi (226-49) and Hu Yen (third century) who sought a synthesis between Confucian and Taoist ideas (cf. Vol. II). At the time when the Confucian texts were being expounded and commentated by the light of Taoist terminology and when Kouo Siang (d. about 313) in the opposite direction was explaining the Taoist work of the Chuang-Tse in the spirit of Confucianism, there appeared, as plausible solutions to the problems of the day, Indian texts strikingly similar to the Taoist ones, particularly those of the 'Perfection of Gnosis (*Prajnaparamita*)'.

The translators, then, gave to the words *yoga* and *bodhi* the corresponding Chinese term for the Way or *Tao*; *nirvana* became *wu-wei*—the 'doing nothing' of the Taoists—*tathata*, or thusness the Sanskrit term for the Absolute, was translated by *pen-wou*—the Taoist 'fundamental nothingness'. Thus, the Taoists were fully at home in Buddhistic philosophy, and it was among them that were recruited the first Chinese Buddhistic thinkers, such as Huei-yuan (334-416).

The term which gave rise to the greatest controversy was *citta* the word which the Indians used to denote the Spirit. In the doctrine of Che Min-tu (*fl.* 300-30), known as 'Doctrine of Spiritual Wealth (*Sin-wen*)', things existed, but the spirit of man did not have to arm itself with intentions towards them. This was the quietist attitude adopted by Chuang-tseu, according to which 'doing nothing' (*wou-wei*) was not merely the fact of being passive and sub-

mitting to the course of events but also that of devoting oneself to a completely disinterested activity, detached from things and beings. This made it necessary to refrain not only from intervening in the natural course of events but also from having any intention whatsoever of doing so. For the Chinese thinker, therefore, the spirit of man was above all his intentionalism, and that was where it differed from the Indian spirit. This doctrine of Che Min-Tu, abolishing the spirit, intervened as a mediator in the debate between the Confucianist partisans of the being or existent (*yu*) and the Taoist partisans of non-being or nothing (*wou*). But from the Buddhist point of view, the theory of Che Min-Tu was a misinterpretation, for although there existed an idealist school according to which things existed only in the spirit, although there were realist schools which taught of the existence of both things and the spirit, and although the vacuist school (*sunyavada*) taught of the inexistence of both things and spirit, no one claimed the existence of things and the non-existence of the spirit. This doctrine of 'spiritual nothingness' was an echo of Buddhistic vacuity. It was a typical example of the method known as the 'Analysis of Ideas' (*K'o-yi*) which was bringing a very new element of comparison into China at that time, foreshadowing the syncretism which was to absorb Buddhism.

With the thinkers of the fourth century, then, Buddhism had infiltrated into the highest spheres of the Chinese intelligentsia and had won its spurs in the philosophical discussions. Henceforth the latter were dominated by two notions which illustrate the development of thinking at that time: the Absolute and the facts on the one hand; and subitism and gradualism on the other.

The absolute and the facts (*li* and *che*). In the first texts dating from the eighth century B.C. (the term *li* signified the division of the earth into cultivated plots, or in other words land apportionment. In the philosophical texts of the fifth and fourth centuries B.C., this organization of the land was extended to the universe, and the term *li* came to mean the distribution of things and beings (*wou*) and the organization of facts and events (*che*), or in more general terms the rational Order of the Universe. Its sphere of application was as much moral and political as cosmic, for this rational order was that of the macrocosm and also that which served as a reference for laying down human duties, governing passions and determining the fate of each person.

The Taoists, looking for a definition of the specific nature of each act, thus called it the *li*—and each *li* was considered as a constituent element of that whole which was the Grand Order (*ta-li*). The latter then became identified with the Way (*tao*)—both Way of Heaven and Earth (*tao-li*) and universal Reason which embraced all determined particular reasons (*ting-li*). By the end of Antiquity, the notion of *li*—a rational notion—had thus become a transcendent absolute. In spite of its ultra-mundane character and its frank assimilation to the principle of 'non-being', this notion retained a naturalist background among the Taoists, although it was insufficient to enable the Confucianists, attached to the principles of life and being, to adopt it.

After the introduction of Buddhism, the *li* increasingly approached the pure absolute after the manner of the Mahāyānist 'thusness (*tathata*)' or the *un* of neo-Platonism. This transfiguration is evident from the writings of Che-tuen (314–66) where the *li* is put on the same footing as *prajna*, and thus belongs to the domain, where all words are abolished, which can only be attained through ecstasy. Whereas formerly the *li*—a structural rationalism—had been understood in the world, with Che-tuen it was a 'supra-mundane' order, as the Buddhists said (*lokottara*), an almost Indo-European order such as China had never known before. It was opposed to the mundane facts of immediate experience (*che*) and achieved a combination of notions of which the neo-Confucianists were to take possession later in order to provide a basis for their theories.

While the evolution of the concept of the relations between the Absolute and the Facts illustrates the transformations in the content of philosophical thinking, that of the antinomy between subitism and gradualism takes into account the predilections proper to ways of thinking. Initially, this was a matter of two methods of approach to truth—one proceeding by intuition, one and all-embracing, described as sudden (*huen*)—and the other, resorting to multiple progressive exercises, described as gradual (*tsien*). Now these are not only techniques of synthesis or analysis, but also two conceptions of truth considered in its metaphysical essence. The 'sudden' implies oneness as compared with multiplicity, totality as compared with partialness. Subitism is therefore a form of absolutism, of totalness. 'Gradual' implies plurality, accumulation, temporal spatial determination. Gradualism, therefore, is rather a relativism and a pluralism. The notions of subitism and gradualism were laid down in their conventional form during the T'ang epoch (eighth to ninth century A.D.) within the school of *Dhyana* (Chin. *Ch'an*, Jap. *Zen*) but it is probable that Che-tuen had already laid the foundations for them in the fourth century. In the following century, the monk Tao-cheng (about 360–434), a disciple of Kumārajīva and Sanghadeva, who devoted themselves to the Great Vehicle and the scholasticism of the Little Vehicle respectively, clearly understood the two trends of Indian Buddhism and, it is said, had the subitist doctrine revealed to him. Sie Ling-yun, a friend of his and also a syncretist, instead of trying to reconcile the two Indian vehicles as Cheng did, tried to reconcile Buddhism with Confucianism. For him, the difference arose mainly from the specific natures of the Indian and Chinese temperaments, the first, tending to lengthy study, discursive analysis and inductive research, was gradualist, while the second, more inclined to grasp the truth by direct and synthetic intuition, tended to subitism. In fact, in the Chinese environment, the point of view of Sie Ling-yun should be modified, for, to be precise, it was the Taoists who were subitists, as opposed to the Confucianist who were clearly gradualists. But everything is relative, and it is probable that, as compared with the intricacies of Indian thinking, Confucianism, somewhat influenced by Taoism, had the appearance of expressing itself by abbreviations which might have been described as subitist.

The subitist doctrine, related to the study of the texts on the 'Perfection of Gnosis (*Prajnaparamita*)', is nevertheless of pre-Buddhistic inspiration in China. For a long time the Confucianist texts had been pointing out that *Virtue* was the result of a progressive accumulation of studies (*tsi-hiue*), and of efforts at gradual and voluntary acquisition, whereas the Taoistic texts taught the Way—the essentially one and indivisible *Tao*—achieved by an intuition devoid of all activity and will. 'Thao functions spontaneously and comprises no accumulation' it was stated as far back as the sixth century B.C. in the Chuang-tseu. This antimony in fact corresponds to a deep-seated and permanent polarity of the Chinese mind. For that reason, it was to dominate the entire philosophical movement of the eighth century and take the central position in the dogma of the school of *Ch'an* (Jap. *Zen*).

6. THE CHINESE AND THE PHILOSOPHY OF CH'AN

At the beginning of the fifth century, a new era had opened for Chinese Buddhism. An entire generation of thinkers then came into contact with Indian and Serindian scholars, thanks to Kumarajiva (344–413). Under the influence of erudite personalities such as that of Paramartha in the sixth century and that of Hsuan-tsang in the seventh, the original sources of Buddhism became increasingly well known, and questions of subitism and gradualism receded into the background. But as from the seventh century, the ideas of Che-tuen and Tao-cheng, after three centuries of obscurity enjoyed a new vogue from which the school of *Dhyana* (Chin. *Ch'an*, Jap. *Zen*) benefited considerably and which was adopted for a long time by the whole of far-eastern society. Traditionally, the teaching of Buddhism was passed on not only by means of the texts but also orally from disciple to disciple, often in esoteric form. Thus it was that the legendary Bodhidharma was supposed to have been the twenty-eighth patriarch of the teaching of *Dhyana* in India and to have founded that sect in China under the Chinese name of *Ch'an*. But it was with Chen-hieu (d. 706) and Hui-nong (638–713) that *Ch'an* did in fact begin. Chen-hieu, reviving the ideas of Tao-cheng (c. 360–434), placed the accent on the Universal Spirit, whereas Hui-neng supported the ideas of Seng-chao (384–414) on nothing, fundamental nothingness, non-existence (*wou*). The antagonism between the two masters gave rise to a schism; the first is still known as the founder of the school of the North and the second as the founder of the school of the South. It was to the second, named sixth patriarch after Bodhidharma, that the adepts of *Ch'an* subsequently referred.

The first principle was *wou*; it is undefinable, inexpressible and even more than inexpressible, since each term limits it, whereas it is infinite. The entire teaching of the *Ch'an* masters was aimed at an understanding of *wou*, but since this was beyond the expressible, all things, and all thoughts, assumed it; thereby, the very thinking of *Ch'an* placed itself above all principles defined by other thinkers, by extolling the virtues of silence, which alone could evoke

wou. The method employed for attaining the inexpressible is not to improve one's mind, since that implies a deliberate effort, which may be beneficial but will not be eternal since it will engender another Karma and will not stop the Wheel of Birth and Death. The best thing is merely to accomplish one's task, without deliberate effort and without any intention in mind; this, in fact, is the practice of the *wou-wei* (not-doing) and the *wou-sin* (not mind) of the Taoists; it is also to act naturally, live naturally, and go on with one's trivial daily tasks; for this purpose, it is enough to have self-confidence and do everything which is considered normal and ordinary. However, the absence of mind improvement is distinct from ignorance, for a mind free of intentions, even of that of remaining ignorant, and free of attachment must be brought to the task; this is, therefore, really self-transcendence and not innate unconsciousness. This transcendence is itself a preparatory step towards enlightenment. The latter is the vision of the Tao—a vast stretch of emptiness where the true can no longer be distinguished from the false—a state from which all destruction is absent. Enlightenment comes suddenly, and it is only at the moment when the disciple reaches his threshold that a master can help with the method of the 'stick or shouting'. Thus, a physical shock may precipitate him into that state of enlightenment for which he has so long prepared himself. Once enlightenment has been attained, the Ch'anist wise man goes on living a normal life; in passing from Illusion to Enlightenment he has left mortal humanity behind him and has entered the state of wisdom; but afterwards he must leave the state of wisdom and return to mortal humanity. Thus, although this man does what other men do, he is no longer the same, for he is no longer attached to anything. It is by this attitude of accomplishment of everyday tasks that Ch'an invites acceptance as ideal of service to the family and the state; but the Ch'an masters do not speak of this; it was the neo-Confucianists who were destined to formulate it.

7. NEO-CONFUCIANISM AND THE DOCTRINE OF CHOU-HI

It was during the fourth century that the Subitists had started off a movement which blossomed fully only in the eighth century; the same premonition informed the Confucianists of the eighth century that they were beginning a reaction which would result in the triumph of the neo-Confucianists four centuries later.

Han Yu (768–824) and Li Ngao (d. 844) were the first reformers of the old Confucianism which had been devitalized by Buddhism. They revived the Ch'an theory of the transmission of the esoteric teaching of Buddha by a succession of patriarchs and adapted it to Confucianism: the 'Truth' was transmitted to one of the Yao legendary Wise Kings and, as a result of successive transmissions, Confucius finally received it and handed it on to Mencius, the last of the orthodox line, for no scholar has penetrated the sense of this truth since then. The neo-Confucianists admired Han Yu for having revived the

tradition of what they called the school of the Study of Tao (*Tao huiue kia*)—i.e. of Confucianist *Tao*, which means the Way of Man, rather than the Yaoist *Tao* which implies the Way of Nature.

The chief sources of neo-Confucianism were, first of all, Confucianism itself, and then Buddhism in the dominant form of Ch'anism, followed by Taoism. The Sung dynasty (960–1279) just re-unified the country and were turning towards the traditional values of its culture when the first neo-Confucianist philosophers interested in cosmology were born. The master of Lien-ch'i, or Cheu Tuen-yi (1017–73) studied the mystic diagrams prepared by the Taoist monks.

Deeply impressed by one of the diagrams of the *Book of Mutations* (*Yi-king*), that of the Supreme Height or Ultimate Supremeness (*t'ai-k'i-t'ou*), he drew a small commentated text from it known as the *T'ai-k'i-t'ou chouo*, which is of sufficient importance for the English translation given below.

1. Without Summit and supreme Summit.
2. The supreme Summit stirs and engenders *Yang*. When it reaches the end of its movement, it is rest. In the rest stage, it engenders *Yin*. When the rest is over, movement begins again. Each movement and each rest are the origin of one another. Though the separation of the *Yin* from the *Yang*, the two fundamental ways of beings appear.
3. The *Yang* evolves, the *Yin* joins it, and they engender water, fire, wood, metal and earth. As the five breaths come to a proper agreement, the four seasons pursue their course.
4. The five elements form a single *Yin* and *Yang*. *Yin* and *Yang* form a single supreme Summit. The supreme Summit itself is without Summit. The five elements are born from it, each with its own nature.
5. The true reality of the without Summit, the hidden activity of the two principles *Yin* and *Yang* and of the five elements unite in a mysterious fashion and are condensed. From the *Tao* of Heaven comes the male character; from the *Tao* of Earth the female one. The two breaths are excited by one another and engender ten thousand beings. The latter engender one another and evolve and progress endlessly.
6. Only man attains the highest perfection and is endowed with the greatest gifts. When the body is formed, the mind produces knowledge in it. The five natures (i.e. virtues) are excited and become active, good and evil separate from one another, and the ten thousand acts proceed from them.
7. The holy man orders his life according to the happy medium, uprightness, goodness and justice.

Note: the way of the holy man is goodness, justice, happy medium, rectitude and nothing more. But he places tranquillity above all else.

Note: he is without passions and therefore enjoys tranquillity. He constitutes the supreme perfection of man. Thus, man is in conformity

with Heaven and Earth through his virtue, with Sun and Moon through the clarity of his intelligence, with the four seasons through the regularity of his conduct, and with the demons and spirits through his influence on happiness and unhappiness.

8. The noble man who puts this into practice is happy; the vulgar man who transgresses against it is unhappy.

9. That is why it is said: 'To explain the Tao of Heaven, we speak of Yin and Yang. To explain the Tao of Earth, we speak of soft and hard. To explain the Tao of Man, we speak of goodness and justice.'

It is also said: 'Go back to the beginning of things and go on to their end to have an understanding of the sense of life and death.'

10. Great is *Yi*, the *Book of Mutations*; this is the quintessence of it.

The aim of the neo-Confucianists was to teach the means of perfecting Confucianist wisdom. Buddhism looked for salvation outside the world of human beings, but neo-Confucianism benefited from Ch'anism, which was concerned with ordinary actions, in order to implant its ideal within human society. The state of repose extolled by Cheu Tun-yi is that of non-desire (*wou-yu*)—a replica of the non-effort (*wou-wei*) and non-mind (*wou-sin*) of Taoism and Ch'anism. The slight difference is in the emphasis placed on the egotism of desire (*sseu-yu*) and on the natural, spontaneous response which man should give in all situations. The method of Cheu Tun-yi was, in fact, the same as that of the Ch'anists—living and behaving naturally. Chao Yung (1011-77) was to proceed further than Cheu Tun-yi with the commentaries on the diagrams by taking his inspiration direct from the Book of Mutations (*Yi King*). From this he took the assimilation of the cycle of the year to that of the hexagrams and added to the *Yin* and *Yang* of the functional aspect of Heaven the notions of Softness and Hardness which pertain to the Earth. These two pairs of terms constitute his Four Emblems, which in turn produced the eight trigrams. The latter thus represent the Four Emblems either in an accentuated or in a diminished form: thus, the *accentuated Yang* is the sun and the *diminished Yang* the stars, the *accentuated Yin* the moon and the *diminished Yin* the spaces of the Zodiac. For the Way of the Earth we have in the same way an *accentuated Hardness* which is fire, the *diminished Hardness* of stone, the *accentuated softness* of water and the *diminished Softness* of the soil. The interaction of the Emblems produces the development of the Way of Heaven and the Way of the Earth. Under his diagram Chao Yung places the Ultimate Supremacy, a unit which does not move but which produces the duality of movement and rest. By increasing the number of hexagrams to sixty-four, Shao Yung could represent the universal law governing the evolution of all things, taking into account the alteration of the seasons and night and day, and the alteration of the phases of construction and destruction, all things implying its negation, as had already been laid down in the *Book of Mutations* (*Yi King*) and by Lao-tseu. Chao Yung published a 'Cosmological

Chronology (*Huang Ki King che*) which showed that the Golden Age had passed and that the world was beginning to decline over a cycle which would last 129,600 years. At the end of the decline, the former state would merely be repeated. Chang Tsai, Master Heng K'iu (1020-77), worked out comparable theories, but placing the accent on the idea of *K'i* gas or ether and approaching the concept of matter as opposed to the Platonic 'idea' or the Aristotelian 'form'. This is the undifferentiated raw material of which all individual things are formed. Chang Tsai identifies the 'Ultimate Supremacy' (*t'ai-k'i*) of the *Book of Mutations* (*Yi-king*) with the *k'i*. Concerning the *k'i* or Grand Harmony he writes in the *Cheng-meng* (correct discipline for beginners): 'Because it incorporates the interacting qualities of floating and sinking, of rising and falling, and of movement and rest, there appear in it the movements of the forces emanating from it.' The Great Harmony (i.e. the *k'i*) in its totality is also a 'wandering air' which influences the Yin and the Yang, resulting in condensation or dispersion; the former results in the formation of concrete things and the latter in their dissolution. In conclusion, Chang Tsai considers that, since everything comes from the *k'i*, men and things are merely parts of the same whole, and we should therefore serve heaven and earth as our parents, that is by adopting in everything a moral behaviour impregnated with love for all mankind. This Confucianist attitude towards life was bound to please all those whom the Buddhist and Taoist seeking into the Beyond did not satisfy, but they were also the logical sequence to the precepts governing daily life preached by their Ch'anist adversaries.

After the cosmological phase of the neo-Confucianists, there came a more philosophical phase with the two brothers Ch'eng Hao (1032-85) and Ch'eng Yi (1033-1108). The elder of the two founded a school of the Spirit (*Sin huie*) which was made famous by Lu Kieu yuan or Lu Siang-chou (1318-94) and later by Wang Cheu-jen or Wang Yang-ming (1478-1528). The younger founded a school of Laws and Principles (*Li huie*), the most famous and learned disciple of which was Chu Hi (1130-1200). The two brothers had received a sound education and profited from the teaching of Chu Tun-yi of Chang Tsai and also, no doubt, of Chao Yong, Ch'eng Hao was much attracted by the moral conclusion of Chang Tsai, the virtues of whom he summed up in the term *jen* (human goodness): justice, propriety, wisdom, and loyalty—all are *jen*. We were originally at one with all things, a fact which should be kept in mind in all circumstances, and a sincere and attentive effort should be made not to step out of line. Repeating the saying of Mencius, Ch'eng Hao sees in the *jen* of Heaven and Earth the striving towards life of all beings. Ch'eng yi devoted himself more to the cosmological ideas of Chang Ts'ai. Adopting his vision of the *K'i*, in dispersion or condensation, he added the idea of *li*—a guiding law according to which the particularities of things can be properly determined. The activities of the *k'i*, therefore, cannot be thought of without a predetermined *li*. Hence the idea that everything is the incarnation of some principle in matter. The *lis* are eternal and complete. The

World above forms is empty, and has nothing in it, but it is filled with everything since it contains all the *lis*. That being so, the essential thing for spiritual training is not the repose extolled by Cheu Tuen-yi (no doubt to some extent influenced by Ch'anism) but attention (*tsing*) which makes it possible to make an initial effort so that none needs to be made in the final state. Where the emotions are concerned, Ch'eng Mao considers that they are outside oneself, for the mind is like a mirror in which are reflected things worthy of content or discontent. Once the object of passions has disappeared, the emotion should disappear. One of the declared aims of the neo-Confucianists was happiness. There was emphasis on the happiness of the sage whose mind was in a state of repose and who maintained his uprightness within his movement; in short, it was enjoyment of the ordinary course of events.

Chu Hi (1130-1200) is the great personality who dominates not only neo-Confucianism but the whole of Chinese philosophy. His system, modelled on that of Ch'eng yi, was the one with the greatest influence in China until the introduction of western philosophies in the twentieth century. His work is illustrated by the commentaries he drafted on the works of Confucius: the *Talks* (*Luen-yu*), the *Invariable Environment* (*Chong-yong*), and the *Great Study* (*Ta-hine*), and the works of Mencius (*Meng-steu*), which were combined under the title *Four Books* (*Sseu Chu*)—a real scholar's breviary and an indispensable manual for any examination candidate. Chu Hi adopted the idea of law and principles (*li*). One thing is a concrete example of his *li*: it is the *li* which makes it be what it is and exists before the thing exists. That which unites the *lis* of Heaven, Earth and all other things is the Ultimate Supremacy (*t'ai-k'i*). At the same time, the Ultimate Supremacy is inherent to the individuals of all categories of things. It is in each of them, total and indivisible, like the moon reflected in myriads of pools of water. By the side of the *li* of existence, there is the *k'i* of substance which gives the form of the *li*. The *k'i*, capable of fermentation and condensation, brings things into existence. However, it is not affirmed that the *li* has priority over the *k'i*, since the *li* is not separable from the *k'i*, but such priority may be understood. The explanations of Chu Hi in the field of cosmology approach the theories of Cheu Tun Yi and Chao Yong. So far as man is concerned, Chu Hi defines the *li* as the human nature inherent in each individual, but also participating in the Ultimate Supremacy, while only the *k'i* imparts the physical characteristics; clear *k'i*s produce scholars, but turbid *k'i*s produce fools and degenerates. The doctrine of Mencius concerning human goodness is therefore incomplete, since it may be good as a result of its *li* but bad as a result of its *k'i*. Where Chu Hi is concerned, the spirit is the incarnation of the *li* in the *k'i*; the spirit is concrete whereas the nature of man is abstract; hence the possibility of the spirit's thinking and feeling, whereas nature, being the *li*, cannot react. The *li* is therefore in the image of a drug: appreciable only in its successive effects. As we shall see later (p. 509), the thinking of Chu Hi involved a political philosophy in which the *li* played the part of a principle of government. In addition,

the teaching of Chu Hi caused his disciples to devote themselves to the intelligence of things; basically, they would be in the same condition as the 'sudden' enlightenment of Ch'anism, which the Chinese could not forget just because it was one of the most Chinese expressions in this current of thinking.

The school of the Study of the Spirit (*Sin-hiue*) did not have a scholar as eminent as Chu Hi, but its promoter, the idealist Lu K'ieu-yuan (1131-91) was, in spite of divergencies of opinion, a great friend of his. Lu Kieu-yuan emphasized that truth had come to him through a sudden enlightenment, and here we see once again the world dear to both Taoist and Ch'anist—the Universe is my spirit and my spirit is the Universe. He opposed Chu Hi, claiming that it was not nature but the spirit which was *li*. The spirit was therefore not *k'i*; for this school made little distinction between nature and the spirit; what distinction there was was verbal between these terms and those of feeling or aptitude. In short, whereas for Chu Hi there were two worlds—one abstract and the other concrete—for Lu K'in yuan there was only one world which was mind in spirit. It was left to Wang cheu-jean Wang-Yang-ming (1472-1528) to develop these ideas, which led the neo-Confucianists to be, fundamentally, more Taoist than the Taoists and more Buddhist than the Buddhists.

8. THE SPREAD OF CHINESE PHILOSOPHY

In Korea, as in Japan, all aspects of the development of Chinese philosophical thinking were imported, and often studied with original interpretations, although the chief theories up to the thirteenth century departed very little from those of their country of origin. We have mentioned the fate of Buddhism, and we shall only take here by way of example the fortunes of Confucianism in Japan. The appearance of Confucianism there is attributed to the envoys Ajiki and Wani who, according to tradition came from Korea in 284 or 285 but more probably about the year 400. It appears that, from this time, a continuous flow took place between the Pakche of Korea and Japan, bringing notions of filial piety, brotherly love, modesty, social etiquette, and of Yin and Yang dualism.

The introduction of Buddhism into Japan was effected by means of thirteen missions which visited the capital of the T'angs from the seventh to the ninth centuries and returned with Buddhist priests and scholars. Whereas Buddhism was particularly successful, this did not alter the fact that Confucianism was particularly appreciated by governing circles and became the basis of political and social education. As in China, university education was based on the great classics explained by the commentaries of Chinese scholars. At the time of Heian (794-865) a number of private schools and academies devoted themselves to Confucian studies. Under the Fujiwaras (866-1184) relations with China were cut off, and Confucian tradition depended exclusively on Japanese scholars, in a climate of Japanization of Chinese culture. The Shoguns of

Kamakura resumed the policy of exchanges with China and gave pride of place to the Ch'an sect (Jap. *Zen*), but did not favour Confucianism, which was chiefly studied among the limited circle of the nobles deprived of power. The study of *li*, dear to the Sung dynasty of the twelfth century, only spread to Japan at the times of Muromachi (1338–1573) and only spread definitely during the eighteenth century with the Tokugawa Shoguns. Thus, the Confucianism of the Han dynasty contributed as much as Buddhism to moulding the Japanese mind, but it underwent an eclipse, from which Buddhism profited, up to the fourteenth century, the epoch at which the neo-Confucianism of the Song dynasty gradually conquered the Korean and Japanese courts.

9. LEGAL AND POLITICAL THINKING IN CHINA

Chinese legal and political thinking was nourished for centuries at the sources of the Classics of the Laws (*Fa-king*), which were drawn-up by Le K'uel during the fourth century B.C. and include six treatises on law. These texts, which have now disappeared, were used as a basis for the compilation of the Code of the Han dynasty (*Han-liu*) by Chu-suen T'ong; this in turn had three sections added to it by the great judge Siao Ho (d. 193 B.C.). The Code, which was widely commented by the ten legal schools which flourished in the third century A.D., particularly by the two eminent leaders of schools Ma Jong and Cheng Siuan, directly inspired the sovereigns of the national dynasties of the south in enacting their own codes, with minor modifications. But over the centuries these various collections of laws had assumed a considerable volume: even as far back as the third century, the code of the Tsins contained 1,522 articles, and that of the Liangs, in 503, had 2,529 articles. Thus, one of the first concerns of the Sui dynasty was to unify and simplify the legal texts. In 583, there appeared the Sui Code consisting of 500 articles. In 653, the T'angs in turn enacted the *T'ang Liu chou yi*, a commented code the text of which is still extant, which became the model of its kind for the Annamite, Korean and Japanese courts, and remained almost unchanged until the end of the Empire in the twentieth century.

Its basis remained celestial law, the law of the Universe, of which the sovereign was the depositary. As executor of this great unchangeable law, the emperor could promulgate edicts to facilitate his government. Thus there came into being the Chinese concept of 'non-permanent' and 'non-invariable' laws, the drafting and application of which depended upon the good will of the authorities, while the masses patiently sought to improve them by means of a veiled resistance. The characteristic features of this law remained the absence of any civil law, a severe penal code for the people, and a code of honour for the privileged. The old antagonism (cf. Vol. II. Book II, Chapter X) between the Legists (*Fa okia*) who supported the legal code, and the Confucianists (*Ju kia*) who preached the moral code, still persisted and changed the nature

of the legal provisions from one dynasty to another. As from the time of the Han dynasty, scholars had been obliged to accept an absolutist bureaucracy in order to defend their privileges; thus came about, in the legal sphere, a merger of Legist and Confucianist traditions. There resulted a 'Confucianization' of Legist ideas which ensured the continuity of Chinese law by placing it in the hands of the scholar-officials themselves.

In fact, the basic antagonism between the two traditions was no longer on the grounds of methods of government but of the application of such methods. According to the Legists, the law should deal with all equally, the State should take priority over the family, and the public weal over private interests. The Confucianists considered for their part that the moral code was sufficient for a man of quality: those who had the advantage of knowing it therefore escaped from the law, which was only applicable to the people. The difference between the two schools was therefore based on equality before the law and not on legality as such.

But while the Confucianists defended arbitrary law in this way, we have to recognize their humanist concern for tempering the rigour of the law by understanding of morals and customs and by the legislation of the rites (*li*). They were able to understand that it was best not to coop themselves up in written law (*wenfa*) and avoided putting custom law into writing. Only what was strictly necessary for civic obedience was laid down in writing, and even then they imparted to the text an ambiguity full of resource, thanks both to the conciseness of their language and to the Hermetism of their style. For it was important for them that the social structure should be maintained and that the hierarchy should be properly understood so that its privileges should be preserved. It was the latter which enabled the officials sometimes to benefit from an automatic reduction of punishments or in any case always to be able to purchase exemption from the punishment inflicted upon them. The classification of crimes by order of importance provided another guarantee of social stability. Thus, at the head of the list came the Ten Odious Crimes all related to disobedience towards the superior authority, state crimes concerned with rebellion, social crimes consisting of insubordination or irreverence, and family crimes connected with strife and incest. Once the problems of hierarchy had been raised, all the legal machinery had to come into play without disturbing the order of things, the ideal being that it should be based on a rigid law applied in a flexible manner.

This was the spirit in which the legislation of all the dynasties up to the fourteenth century were organized. Each dynasty wishing to wipe out its faults and follow the proper road promulgated a new code. The fundamental laws remained slightly modified where some of their secondary terms were concerned, but were then adapted to historical and new economic circumstances. The conquerors themselves, after having introduced their tribal law, which was not codified, finished by adopting the Chinese concepts, for so far as they were concerned it was a matter of governing the Chinese. The northern

dynasties were all quite prepared to introduce novelties, but since they had to resort to legislators who were scholars, these innovations were soon neutralized. Even Buddhism, which has left so deep a mark on Chinese life could not modify the prudent, nationalist attitude of the authors of the code. Naturally, modifications were introduced by means of edicts, prescripts and decrees (*chao, che* or *ch'e*) grouped into compendia; the latter nowadays constitute one of our best sources of information concerning the life of those times, although they contain very little legal information. There were also administrative orders (*ling*) and regulations (*ko*) laying down the interpretation of texts and procedure. Legal power lay in the hands of the scholar-officials already invested with executive power, and regional governors; they interrogated the accused with or without the assistance of a legal adviser. The same concentration of legal and political power also appears in higher echelons; thus, the Minister of Justice reserved to himself the direction of the administrative personnel. Investigation into cases of serious crimes—murder and the Ten Odious Crimes—was carried out by the Tribunal of Censors (*yu che-tai*). Its president, who was a veritable Attorney General of the Empire, was responsible for all territories and controlled all staff; for this purpose he had a High Court and a number of qualified assistants.

In spite of all its defects, eighth-century Chinese Law was well in advance of that which was only known in Europe by the seventeenth century; even the notorious Chinese tortures were undoubtedly no more cruel than the various European 'questions' and executions of the period. The Code of the Suis and that of the T'angs inspired by the Sui Code bear living witness to this through the loftiness of some of the preoccupations they profess. Thus, there was a tendency to emphasize the intention so as to avoid punishing an involuntary act; the law ordering the collective inculpation of the parents and execution of the children of rebels was repealed; the revision of important trials by the Supreme Court was made compulsory, and the delay in the confirmation of capital executions was increased. A clause enacted that a capital sentence would be carried into effect only after three successive reports to the Throne including the opinion not only of the Supreme Court but also of the State Department.

Punishments abolished included flogging, exhibition of the head after decapitation, and strangling. Minor punishments were very carefully graded; thus, strokes of the cane were graded by tens from 10 to 100; on the other hand, hard labour was too often inflicted in order to serve public works requirements. Although there were only punishments to the exclusion of fines, it was possible to purchase freedom from punishment for an amount varying from two to twenty-five buffaloes. Punishment for theft was graded according to the value stolen. Anyone who gave himself up before his misdeed was discovered avoided punishment; on the other hand, an accused was considered guilty until the end of his trial. Legal disputes between foreigners were settled in accordance with the laws of their countries.

10. THE T'ANG CODE, A MODEL OF LEGISLATION

Details did not escape the notice of the T'ang Code. In its articles on 'Protection and Prohibitions' it provides for all breaches of domicile and infringements of the regulations concerning travelling. Thus, it was forbidden to cut across an escort to go abroad without permission under pain of decapitation, to marry a foreigner under pain of exile, unless the foreigner agreed to live in China with his Chinese wife. Regulations concerning government service, both civil and military, showed great severity with regard to the discipline of examinations, failure to observe protocol, divulgence of reports, negligence in the execution of duty, anonymous letters and bribes. Civil law covered family disputes, marriage and divorce, and repudiation or breaking of engagements to marry; a wife who deserted her husband was sentenced to two years' penal servitude. If she remarried she was sentenced to three. Good morals were further encouraged by a sentence of two years' penal servitude for adultery and eighteen months for fornication between young people. If a slave was involved, he was condemned to death. Theft, robbery, brawling, and assault and battery were also punished in very divergent ways. Thieves committing a second offence were decapitated, but a housebreaker received only forty strokes of the birch. Even the surface of hair pulled out was estimated to the nearest square inch. Punishments inflicted for this class of offences was exemplary and could not be bought off; for example, in the case of libel, the utterer received the punishment for the crime which he imputed to his victim, although the latter was not entitled to any reparation on that account. Counterfeitors of seals and money were subject to the legislation on forgery and the passing of forged money; their punishment was death. From the articles concerning miscellaneous misdemeanours we learn that any property found had to be declared; rare, ancient or precious objects had to be handed over to the state, while others were shared equally between the owner and the finder.

Thus, throughout the 500 articles there run like a silver thread half a dozen crimes which give a faithful picture of daily life in China at that time, with all its interdictions and all its worries.

So far as other subjects are concerned, the information is less complete, and it was only recently that it became possible to study property law and commercial law, thanks mainly to the deeds of sale discovered in the sands of Tuen-huang (cf. Chapters IV and V).

So far as property law is concerned, we know that land ownership did not imply 'possessio', since all land was deemed to belong to the Imperial territory and considered as private rather than public property; plots placed at the disposal of the people, therefore, involved neither permanent ownership nor the right to sell. This notion underwent modifications in the ninth and tenth centuries when dominion over the land passed in effect from the hands of the emperor to those of the aristocrats and wealthy private citizens. This gave rise to the dual ownership of the land: ownership of the vegetable covering,

formerly invested in peasants who had become serfs; and ownership of the subsoil, which was claimed by the new masters.

Commercial law appears in a number of the contract texts. It governed transactions from the point of view of the capacity of the parties and conformity of operations to the law, although without laying down the obligations of the parties. A sale in the sixth and seventh centuries was still an instantaneous exchange of an object for its price; the operation was subject only to the requirements of the buyer and the seller, and only the buyer signed the deed; but as from the T'ang dynasty (seventh century) two signatures begin to appear, foreshadowing a bilateral conception of selling. Other texts show that the parents of the seller had pre-emptive rights in sale of property. In the case of loans, guarantors had the heavy responsibility of substituting themselves integrally for a debtor who ran away; creditors could help themselves to 'distress requirements' from the property of the debtor, who in turn could pay off his debt in days of work. Family law, too, became less strict, and patriarchal power was no longer absolute. Under the T'ang dynasty, there had already been a system of co-property between father and sons. In the twelfth- and thirteenth-century documents, there begin to appear the right of women to ownership and co-properties between brothers and sisters, parents, children, and husband and wife. In addition the daughter inherited the same proportion as the brother of the deceased, or the half of her brother's share. However, this practice fell into disuse later.

The successive improvements made by the Sung (cf. Part I, Chapter I) and the Yuan dynasties (cf. Part I, Chapter I) did not involve any profound changes. One might have expected rapid upheavals with the Mongols, but the latter adopted from the start the Kin Code of the thirteenth century, which had itself been derived from the T'ang Code, before replacing it in 1291 by the new treatises of the Che-yuan era (1264-94) (*Che-yuan sin lio*).

It was not until 1323 that they promulgated the Yuan Code (*Ta Yuan t'ong-che*) grouping nearly 2,000 enactments, regulations and rules of jurisprudence, the principle features of which are the supremacy of the armed forces and the fiscal and legal privileges granted to the priesthood.

The same applied to the administrative structure which, in spite of adaptations, remained such as it had been created by the T'ang dynasty, which had opted for a high degree of centralization (cf. Part I, Chapter I). The central power of which the emperor was master, was distributed among the three services: the Imperial Secretariat (*chong-chu*) which was responsible for drafting Imperial orders; the Imperial Chancellery (*mon hia*) responsible for checking the drafting of orders; and the State Affairs Department (*Chang chou*) responsible for executing the orders. In order to remedy the inconvenience arising from the dispersion of these services, the T'ang dynasty had brought them all together in a 'Public Affairs Hall' installed at the Chancellery. The nine traditional ministers had responsibility for general public affairs and reserved to the nine courts and five directorates the dispatch of everyday

business. The Empire was divided into ten provinces or *taos*; each province was subdivided into prefectures (*cheu*) and sub-prefectures (*hi en*). The same division applied to overseas territories, even if their administrators were native chiefs. The prefects were directly responsible to the emperor, but their activities were frequently subject to supervision by the extraordinary Imperial Commissioners (*fu che*) responsible for special missions of undefined duration and unspecified location, who were in fact civil and military inspectors. The important regions, around the capitals and near the frontiers, were organized as General Governments (*tu tu fu*) and conquered countries as General Protectorates (*tu ku fu*), nearly always named according to their geographical orientation.

The administrative reform of the T'ang dynasty affected the entire structure of the country. Prefectures, which had numbered 190 in the year 589, increased to 358 by 639, each of them counting between 20 and 30,000 families. The sub-prefecture remained the basic unit counting between 1,000 and 5,000 families; it was divided into cantons (*hiang*) each containing five villages (*li*) of a hundred homes each. The family associations (*lin* or *pao*) ensured and guaranteed the execution of government orders, particularly keeping the tax records up to date and laying down duty rosters for the execution of fatigues. It is to this vast administrative machinery that we owe the precise statistics mentioned in the dynastic histories and the compendia. Thus, we know that the number of sub-prefectures was 1,551 in 639 and 1,573 in 740, and that the number of cantons in 742 was 16,829; this makes 84,145 villages of 100 families, or in other words 8,414,500 families or about 53 million inhabitants.

The everlastingness of the politico-legal principles and structures should not leave us with the impression of an intellectually monolithic China. We have already pointed out that, while the law was undoubtedly rigid, it ought, in the opinion of the Confucianists, to be flexible in application. Without doubt, there is a major difficulty about appreciating the exact effect of the establishment of all this legal hierarchy nowadays. The letter of the law was more frequently used as a reference than as a basis, and the aim seems to have been the reduction of political influence in the governmental system and the upholding of honesty, discipline and initiative—in short, the development of a consciousness of administrative responsibilities. Nevertheless, political options frequently resulted in the formation of factions which grouped men not only by ideological affinity but also, and above all, by social solidarity. Under the Sung dynasty, those in favour of a purchased peace underwent the changes of fortune which precipitated the fall from grace of the following of the high officials concerned. Such conflicts and rivalries are far from agreeing with the picture of an administrative machinery functioning perfectly. The enormous mass of incidental departures from principle remained dependent on the relation of forces. And yet, the ideal of an independent bureaucracy had become part of political theory, which defined in precise terms the duties of a good official.

Under the T'ang dynasty, Han Yu (cf. Part II, Chapter VI) maintained with a rare literary talent that all intellectual and moral development should be directed towards social action. A few opponents, such as the author of the *Book of the Untalented Master* (*Wu-neng-tseu*), fought a rearguard action in defence of Taoist ideas. They recommended a return to nature and the repeal of the laws. Their movement finished, right in the ninth century, by becoming a characteristic nihilism which, when all is said and done, failed to disturb the prevalence of the political ideas of Confucianism. Under the Sung dynasty, Fan Chong-yen (989-1052) proclaimed that the scholar owed it to himself to shelter everyone from care and only enjoy life when he was assured that all could do so. Wang Ngan-che (1021-86) wanted to restore the social and humane ideas which had inspired the Classics. Chu Hi (1130-1200) devoted his life to proving that everything depended on the attitude of the emperor, that a perfect leader had a perfect government, and that the emperor started off a chain reaction; if assisted by good counsellors, he was the paragon of all virtues. However, the great philosopher made a concession to reality by recognizing the usefulness of the factions which carried on a struggle for influence at the summit of the hierarchy; their opposition could facilitate the triumph of good and the elimination of evil. But these good intentions always came up against opposition from the scholars who, even if they were officials, had retained the phobia of the Legist prescriptions. A great number of scholars retained a conservative attitude towards and against everything; they remained convinced protagonists of laissez-faire and defenders of the private interests of the large proprietors. Thus was maintained their opposition to the radical and progressive innovators who hoped to subordinate private to public interests, which, in their opinion, was the only way of ensuring the national recovery of an occupied country.

The military power of the T'angs and the spread of the Confucianism of the Sung dynasty literally subjugated the neighbouring countries. As always, Chinese elements were adapted to the national idiom. This was the case with Annam and even more so with Japan, which we shall take as an example.

II. THE CONCEPT OF THE EMPEROR AND THE SPIRIT OF JAPANESE LAW

As in China, power in Japan was represented not by the legal but by the administrative authority. But the latter, although emanating from imperial prestige as in China, was not based on a similar social structure. The Japanese emperor was an immutable figure; succession had remained in the hereditary family, and apparently the Imperial line had remained unbroken since the dawn of the Empire. In order to reduce dissension caused by the appearance of various political forces, the government had to resort to special devices. The emperor, in the Chinese style, was and had to remain a model sovereign, but unlike his Chinese homologue, he was of a different essence from that of

existing families. Even before the sixth century, he had given them their names in accordance with their geographical position, their functions, or their merits; and these surnames distributed them among the nobiliary hierarchy, which itself was distinct in nature from its creator. The latter was of divine origin, and was therefore both above and outside the system. Dokyo's setback in 770 marked the last attempt to reverse this state of affairs. Idealized, the emperor did not govern; he reigned, and left power in the hands of his counsellors. That being so, it was at the level of the counsellors that the intrigues took place. As in China, rival factions opposed one another, but here they did so in the name of the great noble families. As the centuries passed, the latter multiplied; the same hopes and the same bitterness persisted, making the working of the administrative machinery increasingly complicated for the latter remained subject to Imperial authority, but in fact depended on a government directed by the 'Grand Minister of State (*Daijo Daijin*)' and frequently supervised by the 'Regent (*Kampaku*)', and the 'Retired Head of Government (*insei*)'. Thus, in the twelfth century, the central administration was three-headed.

The political rise of the Samurai, who were based on the large estates, soon made the peasants dependent on the local lordlings, thus separating them from the Imperial jurisprudence. This decentralization was compensated for by the military organization of the *Bakufu*, which imposed, in the person of the *Shogun*, a fourth administrative head. The *Shogun*, sometimes related to the Imperial family, thus added himself to all the other heads of government; his authority was great but extended only to the subinfeudated lands of his vassals. Gradually, as from the thirteenth century, the *Shogun*, like the emperor, delegated his powers—in this case to his right-hand man, the *Shikken*. This made the administrative structure pentacephalic. Henceforth the only way in which the machinery could function was by reference to the guiding principles of the Chinese codes and by using standing orders to a maximum; the result was empirical administration, giving priority to local customs. After the Chinese-style codes of Taika (646) and Taihō (702), the edicts of Kamakura transformed the spirit of the law by placing the glory of the military lords in the foreground. In fact, the idea that might was greater than right was already prevalent in the tenth century both among the regional magnates and the war-like monks. These edicts assembled in a collection known as the *Jōei Shikimoku* (1232) retraced fifty years of Shogunal experience and applied to the armed forces and to feudal estates. Civil and religious affairs were always settled in accordance with the Taihō Code (702) with its commentaries—*Ryo no gige* and *Ryo no Shugo* (920) and the revised text of Yoro (757). However, the modernism of the *Jōei shikimoku* was fairly soon adopted by both clergy and laymen, for it contained certain provisions against extortions and provided for liberty regarding sales of property and travelling. It was presented as a moral code which gave pride of place to honour and enabled the accused to escape dishonour by means of a spectacular suicide—the *hara-kiri* (or *seppuku*). But

although it was generally adopted, the publication of legal texts became very rare, and certain people even came to consider justice as a favour and the codes as secret documents designed to assist the leaders in distributing the said manna.

Japan, undoubtedly to a greater extent than Korea or Annam, had adopted Chinese legislation while at the same time strongly impregnating it with her own customs, but she was careful to retain the same notion of the State, the same commonsense customs and rites, and the same dialogue between a reigning aristocracy and a governed people as her great neighbour.

CHAPTER IX

THE INDIAN WORLD

I. RELIGION AND PHILOSOPHY

THE religious history of medieval India cannot be dissociated from the philosophical, aesthetic and social evolution of the period.

What we call philosophical speculation was, for the Indians, a religious matter. Now the Middle Ages in India were an epoch of bitter, but fruitful, religious polemics. The Buddhist, Jain and Hindu religious groups confronted one another, while even within each group, the two Vehicles of Buddhism and the sects of Hinduism opposed one another on the grounds of propaganda and reflection.

On the other hand, certain modifications of Indian atmosphere and spirit, and an entire evolution of taste and sensitivity, manifest themselves in the inflections of religious affectivity. It is difficult not to associate certain aesthetical trends with the development of the movement universally known as Tantrism, a subject to which we shall return in connection with the study of art and literature. In any case, it is impossible to dissociate from the study of religions that of religious lyricism, in spite of its purely literary beauty.

Lastly, social and legal thinking itself was not independent of religion. To take only one example, caste, which governed the organization of society, was not a human institution from the orthodox Hindu point of view. It was inherent in the world order and found its justification in the law of the Act—that foundation stone upon which the entire Indian religious edifice reposed. Our present condition is the consequence of acts accomplished in previous lives; men, who are slaves of their past, are born unequal in fact, and secondly, in law. On each occasion, therefore, that the validity of caste has been called into question, whether by the Buddhist, the Jains or adepts of the Bhakti cults, it was in the name of religious convictions or principles.

A. Buddhism

Buddhist spirituality had hitherto profoundly impregnated Indian civilization in all its aspects. The major stages of Indian thought after the epoch of the Upanishads and the ones which are of truly universal interest are the soteriological determinism of ancient Buddhism, the criticism of the school of the Middle Way (Nāgārjuna and his disciples) and the idealism of 'Nothing but thought'. But during the course of the Middle Ages, this influence became blurred; Buddhism lost a large number of its adepts, and its very spirit deteriorated.

The rivalry between the adepts of the Great and Little Vehicle, which favoured the philosophical developments of the Gupta epoch, continued at the beginning of the Middle Ages. But the schools of the Little Vehicle gradually disappeared in India proper after the Hun invasions, and Mihirakula's persecutions were a serious blow to them. Subsequently, it was the Great Vehicle's turn to decline up till the time when the Turko-Afghan invasions destroyed the universities where its living forces had taken refuge. In 1300, apart from Nepal and Ceylon, Buddhism remained in India only in a state of survival.

The Little Vehicle

It was characteristic of ancient Buddhism, which the Little Vehicle claimed to represent, that it set itself up, not as a philosophy but as a means of release—or rather of extinction—*Nirvāna*. It rejected all metaphysics in favour of the liberation from the suffering of existence, the attainment of that *Nirvāna* of which its great exponent is in some ways the experimental evidence.

In south-east Asia and Indonesia, the missionaries of the Little Vehicle had played a decisive part in the process of Indianization, and the sects of the Little Vehicle continued to occupy a predominant position in greater India. The kingdom of Śrivijaya, above all, was an important centre of Buddhist learning: the Chinese pilgrim I-tsing, who lived there from 688 to 695, tells that there were more than a thousand monks, the majority of whom belonged to the school of *Mulasarvāstivādin*, in the capital.

The name of this school, which is mentioned for the first time in the writings of I-tsing, was applied to a branch of the ancient school of the *Sarvāstivādins*—‘those who state that everything exists’. Yet they deny the idea of individual transmigration, since for them the Self is only a series of states of consciousness; however, unlike the Ancients (*Sthaviras*), who believed that neither the past nor the future had true existence, they affirmed the reality of the three times: past, present and future. Their citadel was Kāshmir, and they contributed to the evangelization of Tibet before disappearing. A number of the great translators of the eleventh century, such as Jinamitra and Sarvajñamitra, were *Sarvāstivādins*, who introduced their own disciplinary texts into Tibet. But at the same time, in the field of speculation, the strict Great Vehicle of Śāntideva and Kamalásila clashed, at Lhāsā, with a Chinese Buddhism impregnated with Zen, and came to terms with the practices of the ‘Vehicle of the Thunderbolt’, essentially represented by the one who is considered as the father of Lamaism—Padmasambhava.

The Buddhism of the Ancients (*Sthavira* in Sanskrit, and *Thera* in Pāli), consolidated, both in the field of speculation and that of discipline, by the preaching of Buddhaghosa in the fifth century, was the religion of the state in Ceylon. It survived the decline of the other schools of the Little Vehicle. It was firmly implanted in Lower Burma as from the fifth century at the latest, and fragments of *Pāli Canon*, the writing of which dates back to about 500,

have been found in the area of Prome. After 1300, it was to spread to Thailand, Laos and Cambodia.

Buddhism of the 'Middle Way'

As from the reign of Harsha of Kanauj, it was the Great Vehicle which embraced the majority of the monks and congregations. The tenor of the treatises of perfection of 'Wisdom' and of the Buddhism of the 'Middle Way' (*Mādhyamika*) is not out of keeping with the premisses of ancient Buddhism: the criticism of knowledge developed by Nāgārjuna is also based on practical considerations—supplementing affective ascesis by means of intellectual ascesis. As an effort of thought purification, it is integrated into the Eightfold Path. As was shown in the previous volume, this fine dialectic results in a denial of any absolute reality either of the Self or of the sentient world. But had not an ancient Pāli text already stated: 'To say that things have existence, Oh Kacchana, is an extreme doctrine. To say that things have no existence is the other extreme. Both extremes, Oh Kacchana, were avoided by Buddha, and he preached the doctrine of the Middle Way.' Nāgārjuna merely expressed himself in more dialectical terms: 'One cannot say: "It is a vacuum" or "It is a non-vacuum" or "It is one of the two" or "It is neither the one nor the other". But to indicate it, one names it.'

The affirmation of universal vacuity (*śūnyata*) is therefore a mere linguistic convention. But a single word cannot connote an absence of concept: from the time when it is uttered, it draws interpretations in its train. Among modern authors, widely varying opinions concerning vacuity (*śūnyata*) have been held—ranging from nihilism to the affirmation of a transcendent reality. In fact, it would appear that the Buddhism of the Middle Way denies not so much the reality of things as their consistency. To reproduce a classical comparison, for the monk who sees sons in his begging bowl, because he has faulty eyesight, these sons have reality. The proof is that he insists on rubbing his begging bowl so as to cleanse it from such impurities. But this reality is devoid of true nature, and is relative to him who sees it.

Soon enough the school split into two branches. It can readily be imagined that the refusal to philosophize on a world the existence of which could not be assumed incited the strictest of *Mādhyamikas* to refuse to elaborate positive arguments; they confined themselves to reducing the opponent's arguments to absurdity. This was the tactic adopted, at the end of the sixth century, by Chandrakīrti—the subtle dialectician who produced a number of commentaries.

Others, however, wanted to be able to work out reasonings independent of the arguments of the adversary. Their arguments are more positive, since they are quite prepared to draw conclusions providing that they are concerned with the contingent universe or, as they say, 'the enveloping truth' and not the 'supreme sense (*paramārtha*)'. Among others who belonged to this branch of the school was the great logician Bhavaviveka.

Another great name of the school of the Middle Way was Śāntideva, who was less a philosopher than a great poet. This gives us the opportunity to point out that this abstruse philosophy was not exclusively one of religious fervour. Here is an extract of his work entitled *The Incarnation in the Quarry of the Awakening (Bodhīchāryāvatāra)*:

'With clasped hands I beg the Buddhas of all regions to light the torch of the Law for those lost souls who fall into the pit of suffering. With clasped hands I implore the Buddhas who want to extinguish themselves. May they remain here below for infinite cycles, so that the world shall not be blind . . . Having accomplished all these rites by virtue of the merit I have acquired, may I be for all human beings the one who relieves suffering.

May I be for all sick people, the remedy, the doctor, the nurse, until the sickness disappears.

May I be for the poor an inexhaustible treasury and ready to render them all the service they want.

All my future incarnations, all my goods, and all my past, present and future merit, I abandon with indifference, so that the aim of all human beings shall be attained.

'*Nirvāna* is the abandonment of everything, and my soul longs for *Nirvāna*. Since I must abandon all, better give it to others. I leave my body to others to do as they will with it. Let them strike it, insult it and cover it with dust unceasingly. Let them make of my body an object of derision and amusement. But let me not be the cause of any injury to anybody. If their hearts are irritated and malevolent towards me, may even that serve to attain the ends of all. May those who calumniate me, who harm me and rail against me, obtain the *Bodhi*.

'May I be the protector of the forsaken, the guide of those who go their way, and the boat or bridge for those who wish to reach the other bank; the bed for those who need a bed, the lamp for those who need a lamp, and the slave of those who need a slave.'

The 'Nothing but Thought'

Without denying the positions of the basic texts of the Great Vehicle, and particularly the affirmation of universal vacuity, the great teachers of the Gupta epoch—Vasubandhu and Asanga—had caused Buddhist thought to take a further step forward. In a way, their methods are expressed in terms opposed to the 'Cogito' of Descartes. I think; therefore thought (*chitta*) exists, and this universal thought underlies the universal unreality of phenomena. Whereas the *Mādhyamika* had influenced the *Aphorisms concerning the Brahman (Brahmasūtra)*, this school of 'Nothing but thought (*chittamātra*)' to some extent resembled the Brahmanism of the Upanishads: contemporary movements of thought did not cease to influence one another. This doctrine of 'nothing but thought' or of 'those who speak of conscience (*Vijñānavada*)'

attracted the most eminent personalities. Its influence over certain Mādhyamikas, and particularly Śāntideva, was considerable. In fact, its idealism attracted the élite of Buddhism and spread throughout Asia. The Chinese teacher Hsuan-tsang, who spent fourteen years in India, did much for its prestige in China.

Among the successors of Vasubandhu and Asanga, one of the greatest was Chandragomin, one of those all-round geniuses of whom the India of the Middle Ages produced so many—a grammarian, doctor, dramatist, and a theorist on prosody and even drawing.

But it was above all Dignāga—the author of an epistemology and a logic which were an authority throughout southern and eastern Asia, who took the most active part in the controversy against Brāhmaṇism with the help of the most highly perfected resources of dialectics. His pupil Dharmakīrti, who is sometimes considered as a sautrāntika and sometimes as a vijnānavadin, was the first in a long line of eminent logicians.

This difficult philosophy, incidentally, is sometimes expressed in magnificent terms, of which at least one specimen must be given. For example, from Chandragomin :

'Creatures are mobile and devoid of real nature, like the moon reflected in rippling water. In very pure water shaken by a violent wind, the reflection of the moon is seen at first but disappears almost immediately at the same time as the ripple from which it came, for the real nature of both reflection and ripple is instantaneity and lack of substance. In the same way, creatures are like a reflection thrown on the ocean of the heresy of self.'

This image of the reflection is not new in the literature and thinking of India, but in this passage it is used with inspired skill. It was subsequently used by Kāshmīri Śaivism, which exalted it to an instrument of philosophical research and made ingenious discoveries by it. Whether by influence or convergence, it was in turn adopted by Sufism.

The Vehicle of the Thunderbolt

As from the eighth century, a number of scholars attempted to reconcile theories which had hitherto been opposed to one another—particularly the relativist Buddhism of the 'Middle Way' and the idealism of 'Nothing-but-thought'. Universal vacuity gradually came to be considered as the real nature of everything (*śūnyatasvabhāva dharmah*), in spite of Nāgārjuna's warning that it should not be considered a real entity, and then assimilated to the essence of Buddhism, symbolized by the Thunderbolt, which gave its name to the new vehicle of salvation—the Vehicle of the Thunderbolt or the Diamond—the word *vajra* can have either meaning.

The result was a Monism which attained an inevitable revalorization of the world of appearances: the essence of real things was the Bodhi. If Extinction was the only reality, Transmigration was identical with Extinction. It was

therefore perfectly logical to depend on the psychosomatic unity of body-word-thought in order to attain the Awakening by means of formulas, meditations on diagrams or statues, Yoga and mental creation exercises—a whole series of methods classified in Five Degrees of Progression. But beyond that it became legitimate to enjoy the world—provided identity with Nirvāṇa had been fully attained.

Hence the abuses, often stigmatized en bloc by modern criticism, both Indian and European, without any allowance for the empirical knowledge of the psychology of the unconscious which they reveal. Latter-day Indian Buddhists were well aware that the human personality harbours unsuspected impulses in the waking state; these they explained by vestiges left by former acts in the form of impregnation of the psychism. The accelerated maturing of these 'germs' was one of their aims. Hence the importance attached to dreams by some teachers such as the Kashmiri Naropa.

We have dwelt on certain aspects of Vajrayāna—or Buddhistic *Tantrism* as it is incorrectly called—which reveal trends common to the research of the epoch, independent of religion: only the Jains would appear to have been little attracted by this sort of speculation and the practices arising from it.

This evolution distorted Buddhism and impaired the high level of moral behaviour which had been one of the reasons for its prestige. Moreover, declining Indian Buddhism opened its gates to a great number of divinities such as Mahākāla, which was merely a form of Śiva. The gulf dividing Hinduism from the religion of Buddha was partly bridged at the time when monastic Buddhism was swept away by the invasion. The last of the lay faithful were gradually absorbed by Hinduism.

The Great Vehicle in Greater India and Tibet

The Buddhism of the Great Vehicle, already tainted with *Tantrism*, began spreading into south-east Asia and Indonesia as from the eighth century and gradually supplanted the Little Vehicle, no doubt under the impulsion of the University of Nālandā. In Java, an inscription dated 778 and engraved in north Indian characters (whereas the writings of south-east Asia are usually related to those of southern India) informs us that a king of the Śailendra dynasty had a sanctuary built, known nowadays by the name of *Chandi Kalasan*, and dedicated to the Tārā, personification of virtue and wisdom.

Not far from there were erected, in the eighth century, some of the most important monuments of Buddhism. The gigantic Borobudur, with its obscure symbolism—a *stūpa* swollen to a cosmogram—is decorated with bas-reliefs illustrating some of the most important texts of the Great Vehicle. The *Chandi Plaosan* and the *Chandi Sewu*, the 240 chapels of which are dedicated to the divinities of latter-day Buddhism, date from a slightly later period. There is a general treatise on the Great Vehicle written in Old Javanese, entitled *Kamahayanikan*. Mention should also be made of a curious syncretism between Sivaism and Buddhism in Java, which produced the Śiva-Buddha cult.

In the countries forming part of the Khmer Empire, the Great Vehicle prospered under a very tolerant state Śaivism. One of its characteristics was devotion to Avalokitesvara. But at the beginning of the seventh century, during the reign of Jayavarman VII, Buddhism became the state religion, and a large number of sanctuaries with complex plans were erected and modified throughout the reign of that greater builder. The most astounding is undoubtedly the Bayon of Angkor, with about fifty towers supporting carvings of heads, which probably represent Avalokitesvara 'facing everywhere' (*sāmantamukha*).

In Burma, on the other hand, Sinhalese Buddhism remained predominant, particularly after the reign of Narapatisithu (1173-1210), and in the eighth century the Thais adopted it. Later, it was to become the religion of Lao and Cambodia, whence the Great Vehicle was first to be eliminated by a violent wave of Śaivite reaction.

As we have seen, Tibet was converted to Buddhism under the reign of Srong-bcan Sgam-po (d. 649) and his successors. At the end of the eighth century, Indian Buddhism won the day over Chinese Buddhism during a controversy known as the Council of Lhā-sā. Padmasambhava, who came from a province of north-west India (Oddiyāna) triumphed over the *bon-po* priests, who were opponents of Buddhism. The first Tibetan monastery was founded at Bsam-yas (Samya), and the gigantic task of translating the Buddhistic texts into Tibetan was undertaken. But in 840 (or 900) king Glang Dar-ma persecuted Buddhism, and it fell to one of his descendants—a king of western Tibet—to call upon Indian monks, particularly those from Kāshmīr, to pursue the work which had been undertaken and revitalize the Tibetan church. This was the epoch of the great reformer Atisa (arrived in Tibet in 1042) who affirmed, in opposition to the abuses of Vajrayāñā, that acts—even those of the greatest masters—always bear fruit in accordance with the law of the *Karman*.

In the eighth century, an abbot named *Phags-pa* of the important monastery of the white earth (Sa-skyā) was summoned to the court of Kubelai and provided the Mongol language with writing. This was the start of the conversion of the Mongols to Buddhism.

Without going into details regarding the complex history of Tibetan Buddhism, it is essential to mention by way of example some of the great Lamas. Naropa, the Indian teacher, had as a pupil the Tibetan Marpa, the inheritor of his teaching, and a great ascetic and translator. His legendary biography is full of interest, but does not attain the literary merit of that of his disciple, Milarepa, magician and poet (born end of eleventh century). A curious beauty sometimes emanates from his strange works. Here, for example, is how Milarepa interprets one of his own dreams:

I prostrate myself at the feet of Marpa full of grace
 In that monastery of the mountains which is my heart,
 In the temple which is my breast,
 At the apex of the triangle of my heart.

The horse of my soul flies like the wind.
 If I stop him, how shall I hold him ?
 To what stake shall I tie him ?
 If he is hungry, what pasture shall I find ?
 And if he is thirsty, at what river shall he drink ?
 If he is cold, where shall he shelter ?
 If I stop him, I shall hold him with the Absolute.
 I shall tie him to the stake of profound meditation.
 For pasture he shall have the precepts of the Lama,
 And for drink he shall have the ever-flowing current of memory.
 If he is cold, I shall shelter him with nothingness.

B. Jainism

Of the great religions of India, Jainism, which was founded by the Tirthankara Mahāvira in the fifth century, is perhaps the most often neglected. And yet the Jains played an important part in the Middle Ages in many fields: economy, logic, science, art and literature.

It will perhaps be as well to recall some of the general features of their doctrine. Individual souls are all identical; they are endowed with knowledge and activity and are united to matter, which, in them, becomes *karman*; thus, action is considered as a sort of substance which clogs the soul and impairs its faculty of knowledge, perfection and beatitude. The soul is bound by the influx of the bad *karman*, which is opposed by virtuous conduct—a defence against it—and by asceticism, which ripens and destroys it. When completely liberated, the soul enjoys its veritable essence eternally. Among the virtues recommended by Jainism, the most characteristic is the ‘non-desire to hurt’ (*ahimsa*) a word which is usually translated by non-violence. It imposes respect for all life.

With the schism of 79 B.C., this church divided into two groups—the ‘whiteclad’ and the ‘spaceclad’, who for a long time retained the custom of ritual nudity.

The ‘whiteclad’ were predominant mainly in Rājputāna and Gujarāt. Their Canon was definitely laid down by a Council which met at Valabhi in Kāthiāwār in 980. The conversion of King Kumārapāla by Hemachandra marks an important date in the history of this church. This king, under the influence of his *guru*, attempted to reign as a Jain sovereign, and although he adopted certain excessive measures, others were most praiseworthy. He forbade not only alcohol, gambling and animal baiting, but also sacrifices involving bloodshed, and the sale of meat. All butchers had to close their businesses; they were paid compensation amounting to three years’ turnover. It is said that the hunting tribes of the Girna region suffered from a severe famine as the result of these measures. Kumārapāla also abolished the law confiscating the property of childless widows.

In the eleventh century were erected great temples which were gradually

grouped into veritable holy cities: at Girnār and Śatruñjaya (in Kāthiyāwār), at Mount Abu (in Rājputāna), and at Parasnāth (in Bengāl).

Among the many Jain writers, mention might be made of Haribhadra born at Chitor in the eighth century, author of several works including a vast *Saga* in Prākrit. He opposed Dignāga and Dharmakīrti, although he approved of various theories of the latter. But the greatest of the Jain scholars was undoubtedly Hemachandra (1089–1172), a learned, versatile and prolific writer. Mention should be made of his Sanskrit and Prākrit grammars, his instructions on Yoga, a study of the criteria of knowledge, and a poem inspired by a prose work prior to the sixth century—the adventures of Vāsudeva, which belongs to a type very widespread in Jain literature—the legendary biography.

The community of the ‘spaceclad’, which had settled in Tamil country long before (second century), has earned the name of Dravidian church (*Dravilasamgha*). In the seventh century, Hsuan-tsang told of its prosperity. In Kannada country, its great epoch was that of the Rāshtrakūṭa dynasty; king Amoghavarsha did not shun himself to compose a didactic poem entitled ‘String of Jewels in Questions and Answers’. As from the eleventh century, the Jain community had difficulty in surviving as a result of Śaivite hostility. Under the Pāṇḍyas in the thirteenth century, Maravarman is said to have impaled 8,000 Jains. The anniversary of this exploit is still celebrated every year, but the facts are contested by certain historians. The most violent adversaries of the adepts of the Mahāvīra were the *Viraśaivas* (*Liṅgāyat*). On the other hand, the Hoysala sovereigns gave proof of the greatest tolerance, although this did not prevent numerous conversions to Vaishṇavism.

C. Hinduism

Hinduism, a religion without a set dogma or centralizing authority, is a complex and moving reality. Historically, medieval Hinduism is an extension of ancient Brāhmaṇism and claims kinship with the *Veda*. Rare were its adherents who rejected the authority of the sacred texts. However, the efficacy of the ritual, and the eminent rôle vested in the Brāhmaṇs, who kept the sacred word, could celebrate the sacrifice and therefore played an essential part in the mechanism of the world, were called into question by some sects. Nor does its so original conception of human destiny—transmigration and consequence of acts (*samsāra* and *karman*)—suffice to define Hinduism, since this is shared with Jainism and Buddhism, but it does emphasize one of its chief characteristics—Hinduism is a religion of salvation. The deliverance from the cycle of rebirths, no matter whether it is called *nirvāṇa* or *moksha* and no matter how it is imagined, is the supreme objective of all Indians apart from a few materialists (*carvaka*). The means to be employed in attaining this release are of various sorts; and it will suffice to describe them briefly. Ritual contributes to it, but also, from another point of view, disinterested activities as taught, for example, by Krishna in the *Bhāgavad Gītā*. Introspective

meditation, making it possible to discover the relativity of the transmigrating personality and the identity of the ontological reality of man (*ātman*) with universal holiness (*brahman*), allow of an escape from the laws to which contingent individuality is subjected. Lastly, the omnipotence of divine grace saves the faithful who devote themselves with love to a God—personification of the Absolute.

The gods (*deva*) of Hinduism are countless; they are merely the proliferating manifestations of a multiform holiness and bear no relation to the superior divine personages for whom the title Lord is reserved—Bhagavanta or *Iśvara*—the only sound translation of the word God of the monotheistic religions.

The first documents attesting the cult of *Siva* and that of *Vishṇu* were mentioned in Volume II (*The Ancient World*) of this series. In the Middle Ages, these cults became more and more widespread. At the same time appeared the new texts which took their place side by side with the already impressive mass of literature devoted to Hinduism.

To the religious works proper, such as the *Vedas*, the *Brāhmaṇas* and the *Upaniṣads* (the latter constituting the *Vedānta*, the end of the *Veda*) were added the two epics. Both are of Vishnuist inspiration and dominated by the two major avatārs: Krishna and Rāma. Texts as important as the *Mōkhsadharma* and the *Nārāyaṇiya*, but above all the *Bhāgavad Ghīta*, which is rightly famous both inside and outside India, are included in them.

There also certainly existed, at the end of the Gupta epoch, a number of *Purāṇas* (i.e. 'old stories') although none of these texts in its present form can be considered as being prior to the sixth century; the *Bhaviṣyat-Purāṇa* is mentioned in a text which may date back to the fourth century B.C., although the present work bearing this title is of much more recent origin. But these enormous compilations, many of which have been re-hashed until quite recently, reproduce much older material. In their present form these works do not dissimulate their religious purpose, but they incorporated a considerable share of accounts of the epic type, and there have even been claims—exaggerated no doubt—as to their *kshatriya* (warlike) inspiration. In any case, they have been progressively invaded by religious material.

In addition to cosmogony, to a highly developed mythology sometimes on Vaishṇavite and sometimes on Śaivite lines and often rich in symbolical significance, in addition to abundant prescriptions regarding ritual and veritable philosophical dissertations, there are dynastic genealogies presented in prophetic form and even political precepts for the use of kings and notions of secular science.

The glorifications of holy places with which the *Purāṇas* are interspersed do not suffice to enable us to locate their origins. Only the town of Banāras can claim without undue pretentiousness to have been the birthplace of some of them. But they remind us that Hinduism, at the level of the people, was organized around important centres of pilgrimage, where people arriving from distant regions, of different languages and castes, met together, com-

municated in a collective fervour, received an identical religious training from the priests and became aware of a unity: to a large extent India was forged on the shores of her sacred fords (*tirtha*). (Pl. 18.)

The vast mass of the faithful was no less inorganic and fluctuating on that account. The sects proper, organized round the memory of a master (as for example the Ramanujiyas and the Madhvās) or of a revelation (like the Kāshmīri Śaivites), characterized by a set of beliefs and customs, with their adepts distinguished by certain attributes (wearing of the *liṅga* or style of hairdressing, and certain marks on the forehead) scarcely appeared at all before the eighth century. The name *Bhāgavata* used in ancient days would appear to have indicated merely the worshippers of Bhāgavanta (i.e. Vishṇu) and the *Pancharatras* are not easily distinguished from the *Bhāgavatas*. The Śaivite *Paśupata* sects (according to Śaṅkara this word may merely indicate Śaivites generally) and Kāpālika sects represent extreme tendencies. Even later the vast majority of the faithful did not belong to a sect, any more than they do today.

The need to unify beliefs and codify ritual made itself felt, then, and this was the reason for the existence of texts which were more specifically religious than the *Purāṇas*—the Śaivites *Āgamas* and the Vaishṇavite *Samhitās*, which were drawn up as from the seventh, or perhaps even the sixth century. A traditional classification of the contents of these works divides them into four main subjects: Knowledge (theology); Yoga; Practice (of divine worship); and Conduct (religious and social). Incidentally, these texts do not set forth a very precise doctrine. To take only one example, but a very characteristic one: as of the twenty-eight *Āgamas*, some taught dualism and others monism, and yet this was not considered a contradiction. Śiva would have revealed them one by one so as to provide each with a teaching conforming to his own tendencies. Later, as from the twelfth century, this Āgamic Śaivism gave birth in the south to the *Śaivasiddhānta* which took shape in the thirteenth century and was endowed with a developed philosophy thanks to Meykandadevar.

One of the tendencies of medieval religious history is a fixation of religious beliefs and rites, which results in a diversification and thus a crumbling of religious groups. But at the same time there is an opposing tendency in reaction against this crumbling. The most curious example is that which claims that the whole of Buddhism is a part of Vaishṇavism and that Buddha himself was an incarnation of Vishṇu (destined, by the way, to lose the evil ones, at least from a certain point of view!). In the same way, an attempt is made in iconography to show that a multiplicity in the aspects of the divine being is not incompatible with divine unity. Śiva is represented in the form of Supreme Lord (*Mahesvaramūrti*) with three faces (Pl. 17): Sadāśiva in the centre is surrounded by his terrible shape and his female energy (*Sakti*). There are also representations, particularly in Cambodia, of Śiva (Hari) and Vishṇu (Hara) associated in the same statue, the left half of which has the attributes of Vishṇu (tiara, etc.), while the right half has those of Śiva (chignon,

eye in centre of forehead, antelope skin clothing, etc.). In the same way, Brahma, Vishnu and Śiva are associated and are given the rôles of creator, preserver and destroyer respectively, although they are rarely considered as equals. For example, so far as the Śaivites are concerned, Śiva is identical with the Brahman and is manifested in three divisions subordinated to this essential unity.

It would be of little interest to present the various sectarian groups with a full description of their cosmogonic, philosophical and soteriological conceptions, seeing that the medieval epoch was marked by the flowering of certain quite remarkable movements of piety or thought, on which it would be desirable to dwell. But in examining the most remarkable products of the religious sensitivity and thought of medieval India, it is important not to lose sight of the fact that these particularly brilliant successes are not isolated and that they have merely been taken from a complex, prolific and heterogeneous religious surroundings where research has been permanent throughout the eight centuries with which we are here concerned and throughout the length and breadth of Indian territory. Khmer and Javanese Hinduism, which it is not possible to study here, was also characterized by original features, in spite of the constant exchanges which took place between the Indian metropole and these far distant branches.

At the beginning of the Middle Ages, out of the six philosophical systems (*darśana*, literally 'point of view'), the basic texts of which, whether *Sūtra* or *kārika*, are prior to the Middle Ages, and the lines of research of which were dealt with in the previous volume, it fell to the *Veda* exegesis school—the (*Purva*) *Mīmāṃsa*—to conduct the polemical struggle against Buddhism and Jainism.

Two great scholars, Prabhākara at the end of the sixth century and Kumārila in the seventh century, developed the theses of Jaimini. The sacred text being a revelation of a divine nature, any method of thought other than exegetic was generally speaking useless. Yet henceforward, the *Mīmāṃsa* tackled much vaster problems than ritual. The examination of reality borrows categories from other systems, particularly from *Nyāya-Vaiśeṣika*, and deliverance is conceived as liberation from the bonds attaching the soul to the psychosomatic entity.

Owing to this fact, the ancient liturgy enjoyed a return to favour, to such an extent that the medieval sovereigns, wishing to affirm their sovereignty, undertook to celebrate the Vedic sacrifice of the horse. But India could not be content with this ritualism, which must be recognized as somewhat sterile. Religious life in the Middle Ages was rejuvenated by two vast movements which, incidentally, finished by merging: one was popular and pietist, and the other much more philosophical, descending from the uninterrupted line of speculation which went back to the very oldest *Upanishads*.

Tamil Bhakti

At the beginning of the seventh century there was a religious revival in

Tamil, which rejuvenated both religious sensitivity and its expression, if only on account of the preference given to the vernacular over Sanskrit. To be sure, in India divine love was not a new way to salvation: the word *bhakti* (of which the Tamil *patti* was merely an adaptation) properly signified 'participation', and more particularly participation in the life of the divinity. It was known to Vaishnavism from before the Christian era, and *bhaktimārga* was represented by the *Bhāgavad Gīta* as one of the ways of deliverance. This made it appear as the vengeance of the affective aspirations of religious feeling upon the intellectualism of the ritual and speculative religion of priests and metaphysicians. But during the Middle Ages a contagious fervour of divine love spread throughout Indian society. Sung by poets, often of low caste, in the vernacular, it intoxicated the masses and gave rise to 'saints' who, not fearing to neglect the other forms of religious practice, devoted themselves exclusively to the passionate adoration of the God of their preference—Śiva or Vishnu.

Tamil has sixty-three Śaivite saints, known as *Nāyanārs*; many biographies of them exist, and they themselves have become the object of worship. About the year 1100, their collected works were published under the title *Tirumurai*. With some of them there is a desire to eliminate Buddhist or Jain heresies: 'These Buddhists, with these Jains who have nothing there,' cries one of them, Sambandar, 'may bray their lies to those who pass by; but so far as I am concerned, he who has become a beggar upon this earth has stolen my heart.' But these poets proclaim above all the omnipotence of the grace (*arul*) of Śiva, which destroys obstacles constituted by illusions of the senses, attachments and even the law of the Act:

'Tell me, are there other destroyers of the *karma*
Throughout the vast world ?'

Mānikka Vāśagar, the author of these lines is the most important of the Śaivite saints, with the purest lyricism and the most elaborate philosophy; as shown by two verses from the 'Decade of the Consumed Soul':

Shall I call thee honey on branch
Or nectar on flowing sea ?
I know not what to say, O Hara,
Our precious balm, our king !
Thou who dwellest at PerunduRai
Amid the muddy fields of rice,
Thou whose body is covered with ashes,
O most immaculate master !

All that I know is that I lack you,
And what I have I do not want.
O Hara, our most precious,
Our balm and our ambrosia !
Whose body is like to a scarlet flower.

O Lord of PerunduRai,
Live forever in my heart,
The heart that is me.

The Tamil Vaishnavite saints, known as the 'Profound' or the 'Immersed' (in the ocean of love) (*Alvārs*) are twelve in number, and their poems are to be found in a collection known as the 'Four thousand (hymns)'. They too attack other religions: 'Ignorant are the Jains, stupid the Buddhists, small-minded the slaves of Śiva . . .' And yet the very person who wrote those words recognizes his own humility: 'I was not born of a good caste, I have never studied the *Vedas*, I have never transcended the gifts of the senses . . .'

The greatest of the *Alvārs*, who lived either at the end of the seventh or the beginning of the eighth century, was Nammālvār, who excels in dialogues, in a pastoral atmosphere, between the soul-shepherdess and the divine shepherd with whom she is in love.

Women too participated in this movement: the poetess Āndāl, in love with Krishna, the incarnation of Vishṇu, and above all the great saint of Karikkāl, Karaikkāl Ammaiāyār:

All my heart is thine and has been
Ever since I breathed and lived,
Ever since the first word ever
To have left my mouth.
I have touched, O God of Gods,
Thy flower-embalmèd foot.
O thou black-throated one,
O thou resplendent one,
When wilt thou have pity on my wretched state?

The Thought of Śaṅkara

The most important philosophers who developed the essential message delivered in the *Upanishads* (or, as they still say, the *Vedāntas*—the end of *Veda*) also originated from the south. Their message concerned the identity of the *ātman* and the *brahman*; the only profound reality capable of being discovered in oneself by means of an ascetic and mystical introspection; and the only supreme reality transcending phenomenal appearances, which is what we call, with reservations, the Absolute. In the absence of commentaries, the *Brahma-sūtras*, drawn up in short and elliptical forms, are obscure and allow for various interpretations.

It fell to Śaṅkara (788–820), whom many Indians consider to have been the greatest of Indian philosophers, to impart a truly monist interpretation to this text. For this purpose, he takes his stand upon the theory set forth by Guadapāda, one of his predecessors, who, basing himself on the ancient conception of the *māyā*, the divine power of transforming real unity into a multiplicity of appearances, explains that the world as known through the senses and intelligence is one of pure illusion. Śaṅkara—or as they still say 'Master Śaṅkara, Śaṅkarāchārya'—was an extraordinary philosophical genius who, although he

died very young at the age of barely thirty-two, found the time on the one hand to work out a complete system, to write numerous works expounding a very subtle and pointed argument written in a very pure language, to visit the holy places throughout India, and to preach and uphold arguments against both ritualists and Buddhists. Furthermore he organized a monastic order and, by setting up the convent-universities (*māṭha*) at the four cardinal points of India, implanted this religious and scholastic organization geographically like a gigantic cosmogram on the soil of India. His rôle in the affair was of considerable importance: although not claiming to impose a uniform religion on all Indian territory, he sought to give to India a sense of unity of research and thought.

It will be as well, in summing up the thought of Śaṅkara, to quote a few extracts from his commentaries so as to give examples not only of his style but of Indian argumentation generally.

The centre of Śaṅkara's philosophy is the Self, the only non-phenomenal, absolute and infinite reality: this is the *brahman* of the scriptures, since Śaṅkara insists on strict orthodoxy and considers that the sacred texts are an infallible source of knowledge. This *brahman* is inexpressible and can be known only through an absorption including identification. In him Self, Knowledge and Beatitude are confounded.

As in the case of Nāgārjuna, sentient experience is deprived of all value. The permanent identification of the Self with oneself eliminates all causality, and there is neither evolution nor particularization of the universal, while matter, on the other hand, is divisible and mutable. Individual personality itself is deprived of any real existence; it is contingent, ephemeral and, to sum up, illusory. In each individual it hides the only ontological reality—the *ātman*, identical with the *brahman*.

The knowledge we have of the exterior world, the product of our intellectual categories, is purely subjective: all knowledge of the relative is false science, derived from a confusion between the subject and the object. The criticism of Śaṅkara's knowledge results, therefore, in a conclusion diametrically opposed to that of Kant: all science is relative and phenomenal; from the point of view of the 'supreme sense' only an approach—a metaphysical approach—of the absolute can be justified. To quote an extract from a commentary:

'Inscience makes a phenomenal differentiation, the characteristic of which is the "name and shape", consisting of a manifested state and a non-manifested state, which cannot be defined as being identical with "that" (*tat*, i.e. the *brahman*) or other than him. Through it, it falls to the *brahman* to be the place (base) of the practical universe (governed by the law of) transformation of cause into effect, etc. But in his absolutely real form (*paramārthika*) he remains forever transcendent to the practical order and free of all transformations.'

So we see, inscience is not merely human. No matter how unreal the world may be, it has a cause which, from the point of view of the supreme sense is 'non-self': this is the *Māyā*—a word which in itself implies no notion of illusion or magic. But Śaṅkara insists on preserving the purity of the Absolute, which is not in any way compromised in a creative process and, that being so, the image of the magician who causes fantasmagorias is essential: 'Since a magician is never affected by the magic which he himself produces, because it is not real, so the Supreme Self is not affected by the magic of transmigration'. (Commentaries of the *Brahmasūtras*.)

The adepts of the *Mimāṃsa* school reproach Śaṅkara with being a Buddhist in disguise, and in fact we can sense in the arguments of the master, Gauḍapāda, the influence of Buddhism of the Middle Way. But it was precisely because Śaṅkara, following on the Buddhists, distinguished between two levels of truth, one connected with the world of appearances and the other with supreme reality, that he was able to avoid two pitfalls. First of all, he obviously did not accept Nihilism which, according to Śaṅkara, was the theory of Buddhism of the Middle Way: for the being is hidden by the *Māyā*, but is present under that semi-transparent veil. Secondly, he refused to make any concession to Pantheism, which he could see arising from the system of duality (*Bhartrprapancha*), the weakness of which had been sensed by Śaṅkara (and by Rāmānuja after him, moreover). Śaṅkara expresses the argument of his adversary as follows: 'Brahman is a unity adding a non-duality to the essential being. He is quite comparable to the ocean, into the essence of which enter water, waves, foam, bubbles, etc. And in the same way that water is real, that which is produced from it—waves, foam, bubbles, etc., and which enters into the being of the ocean—is real with an absolute reality.' From this point of view, the world appears to enjoy ontological reality. To this, Śaṅkara replies: 'It is impossible to assert the eternity and necessity of what is essentially multiple, made up of parts, and given over to activity.' (Commentary of the *Bṛhadāraṇyaka Upanishad*)

Like knowledge, deliverance has two levels in the Śaṅkara's system. By the knowledge and adoration of the Brahman considered, in a transitory perspective, as a personal being (*Iśvara*) and by a cognitive effort based on the divine message included in the sacred texts, the individual soul progressively discovers its identity with the Lord, with *Iśvara*. But total deliverance, by the abolition of inscience, is total reabsorption in *brahman*.

Such is the pure monism, the subject of much subsequent comment, which has intrigued many philosophical minds up to the present day and exercised an enormous influence on the subsequent developments of Indian thought. Other schools of thought, including the *Śaivasiddhānta*, reproach it with placing the divine personality at a relative level of truth, lower than the 'Supreme Sense' (*Paramārtha*). Subsequently, several scholars of the *Vedānta* contrived to modify the teaching of the *Upanishads* by infusing into them values of a more truly religious character.

Philosophical Vaishnavism

The Vaishnavites, wishing to provide a metaphysical basis for affective relations between the faithful and a personal god, tried to make compromises, which were not always very subtle or efficacious, between ontological requirements and psychological aspirations. Several philosophers, all from southern India, mark the progress of Vedāntic thinking towards dualism: they are Rāmānuja (d. 1137), Nimbārka (d. 1162) and Madhva (d. c. 1277). Vallabha, who came later (c. 1479–1531), will be dealt with in the next volume.

The system of Rāmānuja is referred to in India under the name 'qualified monism'. Rāmānuja, who came from Carnata, had a Śaṅkarian education but very soon felt the need to supplement Śaṅkara's spiritualist mysticism with the practice of religious piety. He taught at Śrirangam in Tamil country, before fleeing the country to escape from Chōla exclusivism, and being received at the court of the Hoysalas, where he exerted a profound influence. The thinking of Rāmānuja rendered reality to the inanimate world and to the human soul. However, in accordance with the principles of the *Vedānta*, he continued to affirm that the *brahman* is the only universal substance and thus avoided the danger of dualism; the *brahman*, souls and the material world were distinct in being, but their substance was one. Unity and plurality, therefore, were equally real, but the latter was subordinate to the former. Thus plurality became an attribute of unity. Rāmānuja rejected therefore, the theory of Illusion and accepted that souls (*jīva*) possess an individuality which is never completely annihilated: they remain distinct, while at the same time being of the substance of the *brahman*, in the same way that pieces of ice borne by the current of a river remain distinct from it, though of the same substance as the river which bears them. In addition, Rāmānuja establishes the *brahman* as a personal god. Right at the beginning of his major commentary the *Śribhāṣya*, he states: 'As for the word *brahman*, it denotes the Supreme Being (*Purushottama*), the Lord of the Universe.'

This doctrine had a considerable influence in India. Following Śaṅkara's example, Rāmānuja preached sermons and founded a religious order. Now, the theism of Rāmānuja allowed of the establishment of personal bonds of love between the faithful and God, to whom Rāmānuja gave the name Vāsudeva, which is to say Vishṇu. To be sure, it was by knowledge that souls associated with matter in the world, and attained deliverance. But religious practice played a by no means negligible preparatory rôle in this process. Last but not least, devotion was henceforth associated with Gnosis.

Thus the thinking of Rāmānuja fell into line with the Vaishnavite movement of piety of the *Bhāgavatas*. On this account it has such close affinity with the beliefs of the sect that the impression is often given that it is merely organizing them in order to place them in opposition to Śaṅkara's monism. In fact, its philosophical effort crowns polemics and apologetics which are anterior to such monism. Through his master Yamuna, Rāmānuja has affinities with the Ālvārs, and particularly Nammālvār, his thinking is a penetrating and subtle

attempt to defend the Vaishnavite conception of the world against the dialectic of monism, without attacking the intangible revelation of the *Upanishads* or the teaching of the *Brahmasūtras*.

It is therefore reasonable to wonder to what extent Rāmānuja borrowed direct from the texts of the *Bhāgavata* sect, and particularly from the *Bhāgavatapurāna*. If we accept the Indian tradition, the *Bhāgavata-purāna* was written by Bopadeva, a *Brāhmaṇ* of the twelfth century. This would imply that the *Bhāgavata-purāna* develops in a literary form a commentary on the philosophy of Rāmānuja; but it is reasonable to imagine that Bopadeva merely wrote treatises on the *Bhāgavata-purāna* and that this monumental work actually dates back to before Rāmānuja, perhaps by a century or more. If that were so, the great philosopher merely put the Vaishnavite teachings in a more learned and cogent form, and the *purāna* provides evidence of Vaishnavite piety, which inspired the religious life of India throughout the Middle Ages.

The system of Nimbārka, a Telugu Brāhmaṇ who taught in the Doab country, was very close to that of Rāmānuja, from which it differs only in detail. The difference, however, is worthy of attention, for it marks a step towards dualism. Like Rāmānuja, Nimbārka rejected Śaṅkara's monism and, in order to give the appearance of remaining faithful to Upanishad doctrine, he denied that there was any radical difference between the *brahman*, souls and the material world. He tried to preserve the identity and difference between God, world and souls, but whereas for Rāmānuja difference qualifies identity, with Nimbārka the relative rises to the same level of reality as the Absolute and difference is no longer subordinate to identity. In short, this is a dualism hiding itself under shades of meaning designed to safeguard the appearances of monism. Incidentally, and paradoxically, the system is known as *Dvaitādvaita*. To sum up, souls and God have an identical reality, in the same way that leaves and tree are distinct. But the leaf-individuals could not exist without the tree-*brahman* or without the sap-ātman which comes to them from the tree and feeds the tree itself.

In the thirteenth century, Madhva, a Kanara Brāhmaṇ, was radically dualist; he became a fierce opponent of Śaṅkara's philosophy. God was a person distinct from inert matter and souls (*jīva*). Matter and souls were eternal, like God, who did not create them from his own substance but merely acted as the efficient cause of the world, in the same way as a potter who shapes clay. Deliverance was attained by the practice of virtues, cognitive meditation and devotion. As in the *Sāṅkhya-yoga*, the eternal monads, when delivered, remained individualized; they enjoyed their own nature with the Vishṇu. This system, which had some success and still has some adepts, in spite of certain speculative weaknesses and flagrant contradictions with the scriptures on which it is based, is a considerable departure from the positions which represent the originality of Indian thinking as opposed to the monotheism arising from the Bible.

Krishna Devotion

In order not to interrupt the account of this paradoxical progress of the *Vedānta* towards dualism, we have intentionally ignored an entire aspect of the teaching of Nimbārka—and not the least important aspect. This man of the South lived at Brindāvana, near Mathurā, on the very spot where Krishna, the avatār of Vishṇu, was supposed to have lived and made love to the milk-maids. Song X of the *Bhāgavata-purāna* recounted, and emphasized the symbolism of, the adventures of the cowherd-God among the pastorals, which are the souls. Radha is not yet mentioned by name in the text. Subsequently, she is considered as an avatār of Lakshmi, the consort of Vishṇu, and she takes first place in the heart of the Black God.

Religious fervour is thus normally led to borrow the language of human passions. Whereas the devotion recommended by Rāmānuja consisted above all of contemplative meditation on the divinity, the Krishna *bhakti* of Nimbārka was coloured by a much more ardent affectivity. It gave rise to an entire literature the aim of which was to exalt the resources of sensitivity, including the most carnal ones, in order to prepare the soul for divine love. The sect founded by Nimbārka recruited many adepts in the Mathurā region and Bengal.

In the twelfth century, Jayadeva, a poet at the court of Lakṣmanasena, wrote of the love of Rādhā and Krishna, in Sanskrit; we shall refer to this later under the heading of literature. From the same period, perhaps, Umāpati—whose dates are disputed, since his poems, which have been handed down by word of mouth, are more recent in their present form—preferred the vernacular (a dialect related to old Bengali), for, as Kabir was to say at a later date, whereas Sanskrit was like well water—cold and deep—the spoken language flows humbly and vividly like spring water.

The Vaishnavite Marāthā poets, the oldest of whom date back to the end of the twelfth century, are more modest and in order to describe divine love, appeal to another human feeling by praising the maternal tenderness of the Lord.

Kashmiri Śaivism

Kāshmīri Śaivism—or the *Trika* (the Triad)—which was based on aphorisms from which the founder of the system received the revelation (the *Sivasūtras*) in about 800 and which was amplified by a series of brilliant commentators, the most remarkable of which were Kallata, Utpāla, Somānanda and Abhinavagupta, proposed a number of original methods of settling the apparent antinomy between the essential unity of God and the multiplicity of manifestations. This difficult system is now fairly well known thanks to the work of various authors, including the Indians J. C. Chatterji and K. Ch. Pandey, the Italian R. Gnoli and the Frenchman L. Silburn. It is not prepared to be a pure monism: the Absolute embraces both unity and differentiation. The Self, Paramaśiva, is a vibration of conscience, considered as a radiating light, and

the system also includes the teaching name of vibration (*spanda*). But to conscience there corresponds an act which is becoming aware, and here it is that the point of view of the supporters of the *Trika*, who refuse to deny that God has energy even in his undifferentiated form, is opposed to that of Śaṅkara.

This primordial vibration is at the origin of successive emanations, through which the pure conscience assumes the aspect of multiplicity without being tarnished by it, in the same way that a mirror is not tarnished by the objects reflected in it. The manifestation of the universe is produced by 'spheres' issuing from one another. The energy put forth by Śiva engenders in its turn Illusion, from which emanates Nature. This process is analysed in detail, thanks to the inventory (the principle of which is borrowed from the system (*Śāṅkhya*) of basic realities (*tattva*) and different worlds.

The soul, like God, is pure conscience, but it is sullied by the *Māyā*; it offers to God an imperfect mirror, which has to be purified. When the mirror has become perfectly limpid, the soul recognizes its identity with God; this is the teaching of 'recognition'. Incidentally, there are plenty of ways of tearing the veil of Illusion. The discovery can be sudden, and then there is a transport which reveals to the conscience its true nature and the beatitude which is its natural state.

Utpāla (beginning of the tenth century) sang of the intoxication of being absorbed into Śiva procured by the wine of grace, a metaphor which would not appear to be very Indian. Here is another which is more so: 'As soon as they experience the burning thirst of contemplating Thee, realizing Thee and holding Thee close, O Most Powerful, at that very moment the great, fresh and delicious pool of Thy adoration appears to them.' The most eminent scholar of this system was Abhinavagupta (end of the tenth century), whose works are voluminous and cover not only religious practice and philosophy, but also aesthetics, for according to him aesthetic enjoyment may contribute to deliverance. Moreover, it is not essentially different from religious experience. Lastly, it should be mentioned that this is the difficult and yet ardent philosophy which, in the fourteenth century, was to provide the inspiration for the lyrism of Lalla, the first poetess in the Kāshmīri tongue.

Śaktism

Side by side with the Vishṇu and Śiva groups of sects, there appeared at this epoch a third movement, which was not the least curious: Śaktism.

In the Brāhmaṇist cosmogony, the demiurge, in order to create the world, had already created a feminine entity—the Word—his bride and sister. In the same way, in Śaivism, the Great Goddess is the active emanation of the Lord, the energy by means of which Śiva acts, creates, conserves or destroys—the plaything of his hallucinatory magic, the universal *Māyā* and also his Grace. Thus, each God has his Sakti, his bride. It is obvious to what an extent, such

an interpretation, satisfactory only in mythology, would be unsuitable unless accompanied by a commentary.

Thus there emerges an ancient sexual dualism, which is far from being peculiar to India, but which has been reinforced there by an entire system of speculation intoxicated with symbolism. This dualism is similar to, and to some extent duplicates, the dualism of the *Sāṅkhya* system, where female nature (*prakṛti*) is fecundated by the great Male (*Mahāpuruṣa*), which is the spirit. (Pl. 19.)

In the *Purāṇas*, the worship of these Śaktis is organized. Devotion for Rādhā, the beloved of Krishna, arises from the same trend. But it is exceptional for Rādhā to be exalted equally with Krishna, whereas in Śaivite circles, the Śakti is either raised above the level of Śiva or identified with him. Thus is constituted a sect whose books are often given the name *Tantra*. Used in this way, the *Tantra* is synonymous with the word *Āgama*, but the word tantraism has come to be applied, especially as a result of the works of John Woodroffe (Avalon), to a group of trends which undoubtedly had been developing, sporadically and more or less secretly, on the fringe of the official religions, since a relatively distant epoch, and which came to light as from the seventh century. They were the same as those which invaded the Buddhism of the Vehicle of the Thunderbolt (*Vajrayāna*) at the same period. Undoubtedly, the origin of the concepts and practices described in the *Tantras* was partly anāryān, although magic traditions have found a place in Brāhmaṇism.

In the *Tantras*, just as in the Śaivite *Āgamas* and the Vaishṇavite *Śamhitas*, there is a mixture of cosmogonic information, speculation, hymns and ritual prescriptions. Yoga is given pride of place. Psychosomatic techniques were developed considerably during the Middle Ages and were based on an anatomy and a physiology which should not be understood in a purely somatic sense. 'Circles' or 'lotuses' were spread out along the backbone and were joined together by channels within which circulated the breath of life.

On the other hand, the *Tantras* attached outstanding importance to ritual in the process leading to spiritual perfection (*siddhi*) and deliverance. For the 'without-second' is incarnated in the universe, and the individual soul is covered with a corporeal outward appearance, which is thus rehabilitated. The psychosomatic entity, therefore, must be the seat of religious activity. An entire set of speculations were developed, particularly regarding the energy of the Word.

Access to the rites of 'Tantrism' was made subject to initiation preceded by certain tests which included the adoption of a new name and consisted essentially in the attribution of a *mantra*—i.e. a formula. But the most important rite takes place at night, often in a cemetery, and it culminates in union with the Sakti—or in practice with a woman representing her. There are five symbols to represent the elements: wine is fire, meat is air, fish is water, *mudra* (the translation of which is doubtful; it might be gestures or fried vegetables) are the earth, and sexual union is space. The culminating point of

the ceremony, then, is this carnal union which makes the woman with whom it takes place a *Sakti*, considered as a divinity. The act, which takes the individual who performs it out of himself, involves a liberation, and that is the reason why it is recommended that the *Sakti* chosen should be a woman with whom sexual intercourse is normally forbidden (adultery or incest).

The affirmation of the transcendency of liberation, which had been expressed for preference in a paradoxical form ever since the epoch of the Upanishads and which, by rescuing the individual from any contingency, protects him from social and moral censure, was thus, by way of analogy transposed to a practical level. But 'Tantrism' may well sometimes have been nothing more than a means of cryptic expression by means of a sexual vocabulary and Yoga or spiritual techniques.

Such, then, was the religion of multiform wealth which was encountered in India by the Moslem invaders, poorly equipped to understand it. In spite of the efforts of a few thinkers, the greatest of whom was undoubtedly Al Biruni, it is understandable that Islam was shocked by what it considered a magma of idolatry and superstition. And yet, gradually, the initial incomprehension was to give way, so far as some were concerned, to a sympathy mixed with respect. Vaishnavism which, as from the time of Pāñcharātra, was described as monotheistic (*ekāntika*) was even to lend itself to attempts at syncretism. All these exciting developments had scarcely begun in 1300, and a description of them must be left to the following volume.

2. POLITICAL AND LEGAL THOUGHT—THE DHARMA

The entire political and legal thinking of India reposed on the Brāhmanistic notion of *dharma*, and never, not even at the time when Buddhism was preponderant, had the legal and social competence of the Brāhmaṇ caste been seriously contested. It was one of the most stable bases of Indian civilization, not only in India proper but also in greater India.

Thus, although the very notion of *dharma* remains immutably what it was centuries ago, it may perhaps be worth while to recall its fundamental characteristics. The word *dharma* is derived from a root meaning support; it is almost the exact morphological equivalent of the Latin *firmus*, and etymologically the *dharma* is the firm support of the universe. The term is liable to several acceptations in Sanskrit, but it has been promoted among others to the eminent rôle of connoting both the cosmic order and the social order which is one aspect of it. These two facets of an identical reality are, incidentally, intimately related in origin. If the social order is upset, the atmospherical equilibrium and the normal unfolding of the seasons may also be upset as a result. The king, as defender of the *dharma*, is, from this point of view, responsible both for his subjects' behaviour, and the fertility of the soil and the fecundity of the cattle. His task is a religious one—and the temporal side of it is no more secular or 'lay' than the spiritual side.

In a slightly more restricted sense, the word *dharma* denotes the codification of human behaviour as governed by the division of society into castes on the one hand and ways of life (*āśrama*) on the other. *Dharma* covers, therefore, law proper and also normative morals, both of which are considered as being of supra-human origin: the reflection of universal order on human behaviour. The notions of law and morals are not freed from their religious origins, nor even from the concern, which is often subjacent even if not proclaimed, for ritual purity.

Traditionally, India distinguishes between three motives for human action: pleasure (*kāma*), profit (*artha*), and, the most noble, *dharma*. There is also a fourth, but on quite a different level—deliverance (*moksha*); it is incommensurable with the other three, in the same way that the ascetic, whose ethics depend only on the notions of knowledge and nescience (*vidyā* and *avidyā*), eludes *dharma* precisely because he has eluded the world of sin.

The *dharma* treatises—the *dharmashastras*—which together constitute ‘memorized tradition (*smṛti*)’ were all written before the epoch with which we are here concerned: the most important are the *Manusmṛti* and *Yajñavalkyasmṛti*, both of which date from before the Guptas, and the *Nāradasmṛti* of the Gupta epoch. They are reputed to be of divine origin; it is said that the rules of law were originally laid down once and for all to the men of the *kali* age. Law even obeys the law of regression which governs our age, and jurists couldn’t do better than confine themselves to writing commentaries on the *smṛtis*.

These important notions, by the way, are only a partial opposition to effective progress, for the *sastras* are not always sufficiently explicit and need interpreting while the very breakdown of the social order justifies modifications. Provision is even made for exceptional circumstances in which, in case of difficulty (*āpath*) all sorts of derogation are allowed. Lastly, the *shāstras* themselves recognize the authority of ‘custom’ (*āckāra* or *charitra*), i.e. practices peculiar to certain social groups, which are superimposed on the *dharma* and introduce a certain variety into it.

For law in India was not universal. It was subject to caste and, moreover, varied from one region to another. The full force of the *dharmashāstras* was applicable only to the Aryas, and their authority was probably not exercised so strictly outside the *Āryavarta*.

The foundation of law, as of society, was therefore the caste system (*jāti*) which continued, during the Middle Ages, to become more strict and complex. In reality, there were two opposing tendencies which gave rise to a double evolution. There was an attempt to restore the ‘old order’, a strict description of which is laid down in the treatises; in their inscriptions, certain sovereigns boasted that they had fought against a tolerance, a laxity, which they considered as a sign of decadence. In fact, as the caste system was less strict in antiquity than during the Middle Ages, the intransigence of the system was showing a tendency to increase. The word ‘untouchable’, which is often

rendered in European languages by the Tamil word 'pariah (*paraya*)' was used in the *Rājatarāṅgini* in connection with a contemporary of Chandrapīda (seventh century), and yet the social state of Kāshmir at that period would not have appeared to accord great importance to caste.

But another factor in the breaking up of society was competing with the breaking down into castes: the sects, following the example of the dissident religions, Buddhism and Jainism, frequently had democratic tendencies: the most striking example is the Liṅgāyat movement in the Kannada and Telugu countries. Here is how a Tamil poet—traditionally reputed to be the brother of the author of the *Kural*—expresses himself:

Does the rain fall only
On a selected few?
The wind which bloweth overhead,
Is its freshness only
For a selected few?
Does the great earth say
Of some of its children,
That it will not carry them?
Or does the radiant sun proclaim
Of some of the children of Mankind,
That it will not warm them?
Is there food in the fields
Only for the upper castes?
And for lower castes
Is there only desert?
No, there is only one caste
And only one great family.
Of death there is only one,
And of birth the same!
Just as there is only one God
To whom all praise be given!

The *shastras* lay down a theoretical law, which it is accepted, must be adapted to fit the circumstances. This was the task to which the medieval jurists devoted themselves. The treatise most frequently commented (particularly as from the ninth century) was the *Manusmṛti*, which enjoyed great authority not only in India but also in greater India. For the *dharma*, in a much modified form, was one of the elements which helped to ensure the Indianization of the states of the Far East. The influence of the *Manusmṛti* has been detected in Cham and Khmer epigraphy. The Burmese law treatises are explicitly inspired by Manu, although they are works written by monks and impregnated with Buddhism: they bear the name *Manudharmasattham*; in particular this is the title of the code compiled in the twelfth century by king Vagaru. In Javanese and Balinese law, which is more original, the Indian element was considerably modified.

In India itself, the commentaries were not just sterile works: without contradicting the rules imposed by the *śāstras*, they rendered them more flexible and enriched them with jurisprudence, with the result that there were sometimes serious differences among the various authors. The most remarkable of the Manu commentaries is that of the Kāshmīri Medhatithi, who made a new departure by discussing the constitution and attributes of the tribunals who take their authority from the king, who alone was competent in penal matters (*danda*) and was always supreme appeal judge; the *Rājatarangini* gives several very instructive examples of legal problems solved by the king, in cases where the courts had been unable to come to a decision or had made a wrong one. But the work which was an authority throughout most of India was based on the *Yajñavālkyasmṛti*: this is the *Mitākshara* by Vijñāneśvara, who came from Mysore; it was adapted in Telugu as from the twelfth century.

Finally, the considerable literature of *nibandhas* crowned the efforts of the medieval jurists. Drafted by specialists at the order of sovereigns, the *nibandhas* (compilations) provided a methodical presentation of the *dharma*, the various points of which are enlarged upon by co-ordinating the scattered indications in the *Smṛti* and the epic and purānic texts. None of these works is prior to the eleventh century. It is also worth mentioning the *Smṛtikalpataru*—‘The Wish Tree of Legal Tradition’—by Lakṣmidhara, minister of the Gāhaḍavāla Govindachandra. The majority originate from the south; this is the case with the *Smṛtichandrika*—‘The Moonrise of Legal Tradition’—(about 1200). These digests, the aim of which is essentially practical, mark a considerable progress towards the attainment of scientific law.

The *nibandhas*, in their systematic examination of legal problems, attach special interest to the delicate problems of adoption and succession. The Law of Primogeniture is considerably restricted, and the eldest is merely granted the largest share. Along the lines of the action conducted by the Jain philosopher Memachandra, several commentators and composers of digests argued in favour of reserving personal property to the widow. Elsewhere, there is mention of royal judgments granting to the widow succession to the property of her deceased husband. The custom of immolation on the husband’s funeral pyre, although very widespread among the higher castes, was by no means an obligation. There was, therefore, a strong current of liberalism which manifested itself in several fields; one author recommends that judges should take cases in order of importance and only by order of caste where there were cases of equal importance.

To sum up, efforts were made to bridge the gap separating the norm from the fact by imposing a relaxation of the pre-established norm, in order to bring that which should be in line with that which merely could be, while bearing in mind the various practical and moral requirements.

The same necessity was of concern to the theoreticians of problems of government.

The basic document for a study of Indian political thinking is the *Artha-*

shāstra of Kautilya ('The teaching of the *Artha*') which, in the Middle Ages, provided the inspiration for the *Nitikalpataru* ('The Wish Tree of Royal Politics'—*nīti*) by the prolific Kāshmiri Kśemendra.

The word *artha* means profit or advantage, and the *arthashāstra*, of which the *nītishāstra* is a branch, covers politics, economics and administration. The word *nīti*, which refers in a general way to practical wisdom, including even personal conduct, is applied in a more special sense to 'royal conduct (*rājanīti*)' which consists of two aspects, of which the first is imperative and the second practical, the *artha* being, of course, subordinated to the *dharma*.

After the Gupta epoch, there were no more clans, like the ancient Licchavi clan, governing themselves by means of an assembly of nobles. Hereditary royalty became the only system of government.

Coronation conferred an almost divine character on the sovereign. The king became the defender of the *dharma* and to some extent the incarnation of the *dharma* in respect of the portion of the territory over which he exercised sovereignty. Somadeva pointed out after the *Purāṇas*: the king is of supra-human origin and nature; the people should obey him and honour him like a god.

But in exchange the king owed protection to his people, it might almost be said, contractually. He undertook by vow to fulfil this duty, and failure to do so would draw down serious punishment upon him, if only through the functioning of the *Karma*. He was responsible for upholding the *dharma*, as defined in the *shāstras* and by custom, particularly the relations between citizens. This sovereign authority of the norm, and even of local conditions, limited royal omnipotence, say the jurists. Thus, the king derived his sacred character from the mission incumbent upon him, and this subordination, far from impairing the conception of royalty, enhanced its image. Chālukya Vikramāditya VI was praised for having established such peace and order in his realm that it had become unnecessary to lock the doors of houses at night: 'the moon comes in but not thieves.' In the same way, the sovereigns were traditionally protectors of the arts, sciences and letters: this was a title of which they were justly proud, and many of them set an example by writing treatises or literary works. But the king could be deposed if he violated the *dharma*, and the right of the people even to assassinate a tyrant guilty of serious crime was recognized.

The Brāhmans, protectors of the *dharma*, had the right to criticize and could use several methods of protesting against abuses. The most efficacious was fasting, and the history of Kāshmir provides several examples of this. Suicide by fire was also used, but exceptionally. In certain cases, resorting to murder was not forbidden, for 'he who kills justly is not guilty of sin (*Manu*)'. Kalhaṇa approves of two Brāhmans who murdered a minister in the following terms, particularly significant from more than one point of view: 'Even in this *kali* age of ours, besmirched by the decadence of the *dharma*, the irresistible power of those gods on earth, the Brāhmans, has been brilliantly shown up till now.'

The king frequently designated his successor during his life-time; the successor was normally a son of the first queen. A system frequently used, particularly in the Deccan, was that of which the Pallavas and Chōlas offer numerous examples: the sovereign associated his future successor in the government.

Thus, Rājendra Chōladeva I was associated with his father, Rājarāja I, as from 1002, although he only succeeded him in 1014. As from 1018 he shared his royal duties with his son, Rājādhirāja, and went on living till 1042. But the ancient democratic principles (or at least aristocratic ones) were not forgotten on that account: in certain cases, the king could be elected by an assembly of counsellors or nobles; thus it was that the nobles offered the crown to Harsha. The founder of the Pāla dynasty, Gopāla I, was elected by the *prākṛti* (notables) of Bengāl. In the case of Brahmpāla, it was even said that he was elected to the throne by the people. If necessary, in case of religious troubles or during an interregnum, and *dviya* should be ready to take up arms in order to make up for the inadequacy of royal security.

Only a *kshatriya*, according to Manu and Yajñavalkya, could be king. But Manu interprets this condition very freely: a *kshatriya* was one who bore arms, and anyone who led the life of a *kshatriya* could become a king. The necessity for reconciling tradition with practice even made it necessary to call on the resources of mythology: he who protected the people was king (*nrpa*); he who possessed territory was king (*pārthiva*).

Even women were not ineligible for royal power, and this is interesting evidence of the esteem in which they were held and the important tasks which could fall to them, even in Āryan society. Rājyaśri, the sister of Harsha, succeeded to the throne of Kanauj after the death of her husband, and it would appear that Harsha had associated her in the government. Diddā, the authoritarian Kāshmirian, reigned in her sons' stead until they reached majority and then prolonged her regency by killing them fairly soon, one after the other. Rudramma of Warangal (1259–88) used a more innocent expedient—a grammatical one: she merely signed her name in the masculine form Rudradeva. There were other examples in the Deccan where women even led military expeditions: Akkadevai, a sister of Chalukya Jayasimha II, the Governor of a Province, acquired a great reputation as a strategist, while the wife of Hoysala Vīravallabha took on the task of bringing rebellious vassals to reason.

The kings were assisted in their tasks of government by counsellors and 'senior civil servants'. Some of these posts were hereditary: thus it was that dynasties of counsellors and chaplains, whose influence was considerable, were created. Justice was rendered under the sovereign's responsibility, sometimes delegated to senior officials or governors of provinces. Judges were assisted by 'clerks to the court (*kāyastha*)' who fulfilled the tasks of assessors. In the villages, the royal officials were assisted by a council. In addition, certain corporations had their own disciplinary councils.

Public finances were supplied from taxes in cash and kind. The chief of these was the *bhāga*, which normally amounted to one-sixth of the revenue. To this should be added various dues and tolls. In case of necessity, exceptional taxes known as *danda* could be levied; thus, there was discussion as to whether the *Turuskadanda*, levied by a Gāhadavāla round about the year 1100, was destined to pay tribute to the Moslem Turks (Turuska) or for paying for the war against them.

Taxes were considered as payment for the protection granted to the people (Medhatithi, ninth century); they are, says the *Sukranitisāra* forthrightly, the wages of the king. Expenditure to the advantage of the public, which modern terminology would describe as investments, were ascribable to a religious concern for increasing his 'good deeds (*suktra*)' and acquiring spiritual benefits (*punya*). This was why, in addition to temples, reservoirs, canals, norias, roads, rest houses, bridges, hospitals, colleges (*māṭha*), public parks, markets, and so on were built. Nor in fact were the kings the only ones to perform these meritorious acts. Wealthy people were quite prepared to spend a considerable part of their fortunes on public utilities or religious foundations. This was a moral obligation and set off to some extent the enormous disparities of wealth.

This concern for social foundations is a permanent feature of Indian tradition which is worth while emphasizing. One of these manifestations is medical aid. The most remarkable achievements in this field are perhaps those of the Khmer king Jayavarman VII, who founded not only hospitals in the large towns but also 102 hospitals in the provinces, and provided them with regulations. The staff of each of these establishments consisted of two doctors assisted by six persons, fourteen nurses (an Indian text declared that female nurses, who prevent the patient from being dejected and sad, were an essential factor in healing owing to their capability and devotion), two cooks and miscellaneous staff. The royal stores supplied the various medicaments in the quantities laid down in the regulations common to all these establishments. G. Coèdes has calculated that the royal hospitals of the kingdom consumed annually: 11,192 tons of rice, 2,124 kilogrammes of sesame, 105 kilogrammes of cardamom, 3,402 nutmegs, 48,000 febrifuges, 1,960 boxes of unction against haemorrhoids, etc. . . .

The edict founding these hospitals states that the king 'suffers more from his subjects' diseases than from his own, for it is the suffering of the public which makes the king suffer, and not his own.'

This very exalted conception of the duties and responsibility of the sovereign is in perfect conformity with the Indian political ideal.

CHAPTER X

THE ARABIC WORLD

I. RELIGION AND THE LAW OF GOD

SASSANIAN policy in the fourth century as regards religious confession was a clear one: the doctrine of Zoroaster had become the state religion, and a priesthood with a markedly hierarchical structure watched over its administration. According to a well-known inscription, glory accrued to the sovereign in direct ratio to his success in suppressing alien cults, so that the exclusivism of Mazdaism demanded from the subjects of the Great King temporal as well as spiritual loyalty.

In Arabia, the great majority of the population were pagans, the brand of paganism varying from place to place. This fact was not without its significance for the success of the preaching of Mohammed, since it meant that, except perhaps in Mecca, there was no coherent organized body of opposition to contend with. The Arabs of Mecca worshipped trees, and, above all, stones, and it is an open question whether these were merely sacred objects or actual divinities. Islam has preserved in a corner of the Ka'ba the principal fetish of the Meccans, the Black Stone. (Pl. 20.) Alongside solar and stellar cults there also existed the cults of the 'divine goddesses' of the Koran, the name of one of whom, Lat, can be found in Nabataean and Palmyran inscriptions.

Monotheistic creeds had penetrated to the interior of the peninsula. The southern Arabian church was Nestorian, and its relations with a nascent Islam were closer than those of the Jacobites. The 'Christian' tribes in Arabia were only superficially Christian. Christianity had been introduced from outside, and the slenderness of the hold it had gained is apparent in the readiness with which its adherents deserted and rallied to Islam.

On the other hand, Jewish tribes were active in the north of the Arabian Peninsula, especially in the city of Al-Madina-Yathrib and its environment. These Jews cultivated their ancestors' traditions, and Moslem sources speak of this and of the influence of these Jews on their Arab neighbours, prior to the rise of Islam and at its early development.

There were also scattered groups of Zoroastrians and Manichaeans; and in certain Arab texts mention is made of individuals known as *hanifs*, who appear to have been deists, sympathetic to Judo-Christianity but refusing to acknowledge either revelation. They were independent thinkers who disdained pagan practices, and led a sober and peaceful life.

A. Islam

It is clear that the religion revealed to Mohammed was a syncretism of

Jewish and Christian doctrines, supplemented by Arab national pagan traditions. To be more precise, the revelation imparted to Mohammed incorporated dogmas from both Judaism and Christianity, and, at the same time, perpetuated certain Arab tribal rites which were 'more firmly rooted than a belief'.

The Koran (V.5) gave to this religion the name of Islam, signifying 'submission'. The Divinity is possessed of infinite power, man's life in consequence being something which must be submitted completely to the will of God; and all human activity is governed by inexorable laws. There was thus no action that was, strictly speaking, unimportant, and Islam had its pronouncement to make on every problem, from deep ethical questions to the most elementary matters of behaviour.

The general body of beliefs regarding the Divinity and ultimate ends was in its general purport simplicity itself, and the member of the faithful was not faced with any atmosphere of mystery. He had to declare his belief that 'there is no God but Allah, and Mohammed is his prophet'. The pronouncement of this declaration of faith had an important consequence in the legal field, in that it postulated the primacy of oral testimony over all other forms of proof. The Islamic creed accepts the existence of angels and demons, and the necessity of a last judgment, at which the individual will, according to his merits, be admitted to the joys of Paradise or condemned to the torments of Hell. Basically, the Moslem enjoys almost complete absence of anxiety as regards the hereafter: his salvation is assured if he observes the law.

Moreover, Moslem legislation laid down specific duties which were owed to God—the cult—and carefully prescribed the conduct for most ordinary activities, whether for the individual or relating to family or society.

There were five daily sessions of prayer, acts of adoration of the Divinity to be made facing towards Mecca, after purifying ablutions had been performed. There was Ramadhan, a thirty-day fast, during which the believer had to abstain from eating and drinking from dawn to dusk, and from sexual relations. Finally, each Moslem was called on to make a pilgrimage to the Holy Places of Arabia; this requirement, however, contained provision for relaxation in the case of ill-health or poor financial circumstances. The Holy Book laid down certain dietary regulations: wine and all fermented drinks were prohibited, as were pork and dead animals.

A basic family structure was prescribed by the Koran. Polygamy was authorized, subject to certain fixed rules, but it was by no means recommended. It was, moreover, controlled by law so as to prevent its becoming a breach of basic morality. A husband could dissolve a marriage simply by repudiating the contract; dissolution of marriage was also obtainable by a wife, but only at the discretion of a magistrate. The rôle of the woman in Moslem society was a very minor one; in the urban centres at least she was relegated to a place inferior to and apart from the life of her menfolk. The wearing of the veil is referred to in pre-Islamic poetry and was not, therefore, instituted by

Mohammedanism. The seclusion of the woman in no way affected the force of the family as a unit of influence, but her inferiority was assumed in every aspect of life, even in matters of inheritance, where her rating was only half that of the man.

Islam counselled the enjoyment of life in moderation—hence the salutary Moslem exhortation ‘Be content with little!’ In general the Koran is not concerned to impose restrictions on its believers’ enjoyment of worldly things. It would have the faithful ones love this present life and appreciate the good things it offers: no call is made to asceticism or self-denial, except in the observance of Ramadhan, a particularly trying fast. It recommends that a portion of the believer’s worldly goods should be set aside for the relief of the needy—a recommendation which acted as a curb on the self-centred ambition of the rich, often the source of major economic crises. Nor is the slave-owner overlooked; the emancipation of his slaves is held up to him as work of piety.

B. The Koran

The Koran is not determinist: according to the Moslem revelation God may at most deprive a man of grace as the consequence of serious sin. What was new was that religion now embraced the whole of life. Islam was not simply a pious idea; it was a state and was about to give its name to a culture. Moreover, it taught that wherever the Islamic faith prevailed, there also was the true fatherland.

The Koran itself—the word is a transcription of an Arabic word meaning ‘recitation’—was transmitted in fragments. It must be stressed that the original communication was in Arabic, so that it was a case of textual revelation in the strict sense of the word, thus differing from the divine inspiration of the writing of the Bible. The orthodox opinion was that the Word of God as revealed in the Koran was eternal and uncreated, that is, something supernatural that had descended on earth. Though other holy books too were claimed to be divinely inspired, no such status was ever attributed to them.

Systematic written transcription was something that did not occur to anyone in Mohammed’s life-time, or for a quarter of a century after his death. The chapters were then arranged, without regard to the chronology of the revelation, in order of length, with the longest first, after the brief introductory prayer. Any assessment of its literary quality must be made in the knowledge that the book is a collection of oratorical extracts, which are addressed to listeners, not to readers.

The Holy Book as a whole will be seen to fall naturally into three clearly demarcated sections. The first and oldest ‘presents in visionary language emotively coloured impressions of the end of the world and the last judgment’. The various natural phenomena are presented as miracles testifying to the existence of God. It is in a rhymed prose, of vividly contrasting images, a powerful evangelizing instrument. The second, narrative section records the

histories of the ancient peoples, and the receptions they accorded to the prophets who were sent to them. The principal Old Testament patriarchs make their appearance, as does Jesus. These historical fragments, incomplete and often scattered, were frequently drawn upon by chroniclers and poets, and their most striking passages were illustrated by miniaturists. The third, considerable part is purely legislative, and is written like all codes of conduct in a rather dry, curt style that deliberately eschews imagery, apart from a certain assonance at the end of periods.

There are many passages of poignant emotive power; the struggle of Mohammed with the unbelievers takes on a tragic grandeur. The reader can almost feel the fiery rhetoric of the denunciations. Above all, he can sense in the almost word-for-word repetition of the actual threats, all the virulence of adversaries who were sworn to unremitting war, and he is stirred by the apparent immunity from discouragement, in the face of such pagan tenacity, of the one whose will it is to save his people.

The Koran, then, gives expression on the one hand to implacable anger against the unbeliever, a muffled echo of the Prophet's impassioned disputation with the people of Mecca; on the other, to the proclamation, persistently and persuasively, of the eternal felicity awaiting the faithful, and the tender sympathy extended to the victim of fate, to the orphan, and to the poor believer.

Furthermore, it should not be forgotten that the Koran contains precise instructions on matters of law—civil, penal, and commercial. Family relations are prescribed, and questions of inheritance codified minutely. Murder is to be punished by retaliation (II.173), although payment of monetary compensation for a first offence is permitted. Penalties for theft are painful and degrading: 'As for the man or woman who steals, they shall have their hands cut off in retribution for the work of their hands, as a punishment from God' (V.42).

Special mention should be made of the complete abolition of usury, with the consequent ban on lending for interest in medieval Moslem society, and the complication of the details of transactions and deferred payment agreements, the authorities being intent on preventing circumvention of this law at all costs. They were apparently swimming against an overwhelming current, if the Koran line is any indication: 'Do not practice usury doubling a sum and doubling again' (III.125).

Arab expansion had begun, and, on the whole continued, without useless cruelty. The occupation of new territory created from the outset an aristocratic class which stemmed from racial and religious origins, and was maintained in its position and supported in its opulence by the respect and financial obligations imposed on adherents of other cults. The Moslems did not persecute the members of other persuasions; and freedom of religious observance was allowed to all. The universalism of Islam applied only to those of Arabic extraction; the choice between conversion or death was something which only the pagan Arab had to face.

C. The Fiscal Organization of Islam

The fiscal organization of Islam was at first very simple. 'There were two main taxes,' writes Max van Berchem, 'a very heavy cash payment, *djizya*, payable in gold coin, and a lesser, in kind, *dariba*, payable in grain. The separate revenues from these went, in the State budget, to meet two separate forms of expenditure: the *djizya* provided pay for the army, the *dariba* guaranteed supplies in kind for soldiers and their families.' Egyptian papyri furnish details of these dues which were destined to be army supplies—salt, oil, fats, honey, cloth, skins, carpets. Some evidently paid by providing billets for the soldiers. Later, when conversions to the faith had led to markedly smaller revenues from these taxes, a property tax, known as the *kharady*, was introduced, which was levied on land whoever might be the proprietor. 'In the early Abbasid period, there was a threefold division of land for tax purposes: land regarded as Moslem property, on the produce of which the Moslem had only to pay tithes as decided by canon law; land which had been part of conquered territory, held precariously by the native inhabitants, and sooner or later becoming the property of Moslems, who paid the *kharady*; and land still in the hands of the members of a subject race, who continued to have to pay both *kharady* and *djizya*'.

The social disadvantage which these taxes placed upon non-Moslems was made even more burdensome because, from the ninth century on, it was made more immediately outwardly apparent. From that time they were obliged to wear a distinctive sign of their condition, and not allowed to ride on horseback. There was thus a very strong inducement for them to undergo conversion to Islam, whether to be free of the heavy taxes or to enjoy the rights of citizenship.

These reservations made, it may be said that the Arabs took over the Sassanian political ideas as far as non-Moslems were concerned. The Jews continued to enjoy the advantages of freedom from alien direction: Nestorian Christians had long since won acceptance of their anti-Byzantine position; and the Monophysites of Syria and Egypt, whose hostility to Byzantium was patent, benefited similarly from the real tolerance shown by the Arabs. The Mazdaeans, grouped in colonies in certain regions of Mesopotamia and Persia, were the object of analogous benevolence; nevertheless a considerable number of them emigrated to India at the beginning of the eighth century. 'The relations of the new state with the indigenous population were established without difficulty on the basis of the personality of law, as after any conquest, but in this case for what was to prove an exceptional length of time.'

D. Moslem Law

It has been noted that 'throughout the greater part of the first century of the Hegira, Moslem law, in any strict sense of the word, did not yet exist. As in

the time of the Prophet, by no means the whole field of law came within the religious preview, and, so long as there was no religious or moral objection to be found to specific transactions or behaviour, the technical aspects of law were a matter of indifference to Moslems. Their attitude in this respect goes far to explain the very great measure in which they adopted the juridical and administrative institutions of the territories they conquered, stemming as these did from Roman-Byzantine law (including Roman provincial law), Persian-Sassanian law, Talmud law, and the canon law of the Eastern Churches.

The Arab lords constituted an ad hoc authority, not formally defined, a state of affairs which permitted the retention of all that was not directly injurious to Islam or the public order. The conquerors were no more interested in imposing their religion than their language: they were anxious to preserve local customary practice, and deliberately made an intelligent use of tried systems of laws, maintaining in particular the Syrio-Roman custom. The police inspector of the markets, the *muhtasib*, was the successor of the agoranome, despite recourse to the Koran for an account of his essential function—‘to order what is fitting and prohibit what is blameworthy’. The principal functionaries were recruited from among the subject peoples in Egypt and Syria, or from among the conquered, in Iran.

The régime of the conquerors, and later of the Umayyad caliphs, was really what in modern terms would be called a protectorate. It was only in the Abbasid period that this was replaced by direct administration, justified by a community of religion and language.

In the first place, then, there was an upper class of a particular kind, racial and military, having no connection with the soil, jealous and proud of its religious monopoly, authoritarian and exacting unquestioning obedience. Its position of vantage derived from the financial exploitation of the population. The Arabs were at this stage indifferent—almost opposed—to conversion, both from a sense of superiority and for budgetary reasons. However, under the stimulus of Islamic culture, their thoughts began to turn towards a spiritual conquest, and Islamization now proceeded at such a pace that the caliphate became concerned to slow it down for fear that those who were racially of Arab stock should be submerged. Thus by the ninth century the Moslem religion had assimilated a variety of peoples all of whom had learned Arabic. Such people integrated themselves with a civilization productive of a new social behaviour, on which there was no going back in the regions where the Moslem faith remained that of the majority.

Islamic thinking made for a greater mingling of races than did Christianity: there was in it no conception of nationhood as distinct from the religious community. Slavery, moreover, fostered inter-breeding by introducing women of most diverse origins into the Moslem harems.

The first civil wars were inevitable: posterity was to give them a religious colouring but they were primarily conflicts between clans. As regards the historical sequence of events, Sunnism, the traditional school of thought,

found that all had taken place in accordance with the will of God, and sanctified, without too searching a commentary, the series of four legitimate caliphs. On the other hand, the Shiites, the supporters of Ali, professed also to discern the workings of Providence, but with a burning devotion to the suffering church: Ali had been predestined to martyrdom, and his descendants, ever frustrated, were to benefit from the pity of his faithful followers. What is noteworthy is that there were men who dared to take a stand above the struggle of conflicting forces. These rebels, termed *Kharijites*, i.e. 'those who have come out', rejected everything and everybody, thus beginning as an ad hoc coalition rather than any coherent doctrinal faction. A Kharijite doctrine did ultimately emerge, for which the intellectuals managed to provide a case, though it was far-fetched and scarcely constructive. They held that anyone might succeed to the caliphate, provided that he might equally swiftly be deposed if he proved unworthy. It was a principle deriving from the old Arab conception of tribal leadership. What was new was that, Islam having created a ruling caste, the newly converted, probably a majority in this group, were able to enforce the drawing of the logical conclusion—the equality of the races.

Without denying the piety of the first caliphs, tribute should be paid to the complete disinterestedness of the Kharijites. Fired by a rigid faith, they claimed that they never compromised; they preached the brotherhood of all Moslems, so affirming their opposition to Arab predominance; and they repudiated any form of opportunism and condemned the corruption of the powers of the day.

The drafting of a clear body of Moslem law was eventually seen to be inescapable. The Koran, the first juridical source-book, contained obscure passages whose meaning was difficult to interpret, but this was not the major obstacle in the way of the creation of a coherent system. The corpus of the traditions of Mohammed, known as the *sunna*, formed a second obstacle. Mohammed had desired to be, in the terms of his definition in the Koran, no more than a witness of God, a guide lighting the way like a torch, but it was inevitable that Moslems should take his personality as a model.

E. The Hadiths

A voluminous dossier of the Prophet was compiled, recording conversations, gestures, silences, even facial expressions. For a time, there was a feverish seeking out of *hadiths*, with clerks scouring every corner of the Moslem world. The written draft was somewhat delayed, and, outside the circle of the traditionalists, inquiry was directed towards establishing the reliability and accuracy of the people transmitting the information. Here 'questions of authenticity and antiquity recede into the background when one remembers that these *hadiths* represent a faithful and immediate reflection of the aspirations of Islamic society'. The establishment of the texts was carried out with meticulous care. Besides the respect for sacred material, one can but

marvel at the zeal of editors, grammarians, and scholiasts who displayed an excess of conscientiousness rather than any underlying prejudice. The survey was made in complete good faith, although the specialists were well aware that traditions had been invented out of interest and prejudice, and that these traditions were in a sense expedient. If the *hadiths* had remained literature intended for the enhancement of personal piety, the work would have gained in authenticity. But there was bound to be a political bias, given that the aim was to establish rules of social conduct and the foundations of a legal code. Thus the *hadiths* became a stumbling-block, and pious forgeries were only to be expected.¹

After this, Sunnism never wavered. It stood fast by the tenet that nothing was truer than the Koran or surer than the Prophet. Legislation, in the Middle Ages, was much more a matter of the crystallization of long-hallowed practice than of any sudden plunge into the unknown, born of hasty improvisation. Law was custom codified or, better, sanctioned by a certain public opinion. No one wished to give the impression of forcing the pace, for fear of being charged with heresy. The misoneism of Islam is well known. To the mind of the Moslem community, all innovation was suspect and to be deplored as endangering unity or leading to the foundering of the law.

Malik ibn Annas, from whom the Malekite school took its name, gave Islam its first law manual, a compilation of traditions in which he systematically and conveniently incorporated the mean of opinion in the juridical circles of Medina. His method consisted in the classification of the cases to be settled in accordance with interpretations based on authentic texts. Another doctor, Abu Ysuf, the foremost disciple of Abu Hanifa, founder of another school of thought, left a most valuable memoir which gave an excellent formulary of agricultural law, dealing with farming, métayage, and the whole problem of water for drinking, irrigation, and mill-power. The work, despite being called a treatise on property tax, covers all departments of the state administration. Good as it is, it may perhaps be said that it tends to drown reality in theory, and that its fine instructions are based more on piety and tradition than on experience.

Other compilations of *hadiths* were divided into chapters, which offered magistrates excellent research facilities for material on which to base their judgments. The work of Bukhari, for instance, probably the best known, ranges through selling, rents and leases, gifts and legacies, the holy war, marriage and the repudiation of marriage, the right to punish, the law of inheritance, and vendetta. The books, entitled *Sunan* (Traditions), eschewed historical, ethical, and dogmatic tendencies, and concentrated on the study of law and legal custom—in other words, of the licit and the forbidden. They were interested only in such pronouncements as were likely to become rules of conduct. Emphasis on the practical aspect only became more pronounced with time. There is a work of the late tenth century by a Shiite author bearing the curious title: *The Book of him who has no jurist to hand!*

F. The Rise of the Jurists

The problem was not resolved by the fact that by mutual consent the Sunnites had recognized the validity of certain texts. There remained the practical application of the law. In Islam, all the relations of daily life, all public and private dealings, everything which corresponded to our modern international law, concerned with deep problems of war and peace, and all civil and criminal law, stemmed from religious law. It was, therefore, legitimate and logical that in the development of Islam jurists should have preceded theologians. Everywhere two opposing tendencies become apparent, the one clinging to the literal meaning and the other seeking, behind the words, a hidden significance. This major effort gave rise to four methods, or, to use the less accurate but more hallowed term, four rites, each of which Sunnism recognized as orthodox. They are named after the four great jurists who presided over their evolution.

The Malekites allowed personal interpretations, so long as these were conducive to the public good; and the Hanifite school went further, holding that in case of doubt there might be a choice of the opinion which seemed preferable. The Shafi'ites rejected all personal interpretation, admitting a solution by analogy only as a last resort. The Hanbalite school of thought clung narrowly to the letter, and absolutely proscribed any innovation.

There was one other school which pushed to the limit the impugnment of the speculative element in the form of analogy or of personal reasoning, and insisted on holding exclusively to the letter, the obvious and literal sense (*zahir*). Zahirism in the East had only a fleeting success, but Ibn Hazm advocated it brilliantly for a time in Spain in the eleventh century. Orthodoxy found the doctrine too narrow.

The differences thus centred in general round the degree to which personal opinion should be allowed to operate by analogy. The sources of the law were there for everyone: the Koran and the Sunna, against which no voice would ever be raised. These were supplemented, it should be added, by the consensus of opinion of the community. At first sight it would seem a difficult matter to establish the unanimous agreement of the community since there were no councils. But there was no real obstacle to it in practice. Herein is to be found the greatest antinomy between Sunnism and Shiism. The concept of an impeccable and infallible mahdi, so dear to the Shiites, was rejected by the Sunnites, for whom the consensus came before the individual quality of an imam, whatever the degree of his personal saintliness. For them, it was the office of the imam to administer the law, not to exert an influence upon it.

From the first the logical writings of Aristotle were available to Moslem thinkers, and it was the study of these which led to the adoption of the method of analogy in many fields—in the rules governing religious and spiritual life, in the establishment of the norms of jurisprudence, and in the codification of grammar.

Alongside this contribution from antiquity was the part played by the various legislators and their standpoint on matters of doctrine. The law evolved as a product of interchange and reaction.

After the eleventh century, and certainly after the spread of the *madrassas*, it may be said that personal opinion and the consensus of contemporary society played a lesser part. The Koran and the Sunna alone retained their legal importance, which tended to give the quality of invariability to the laws.

In addition, the believer was encouraged to develop his conscience by an awareness of the quality of his actions. The jurists had divided human actions for his benefit into five categories: (i) obligatory—e.g. the observance of religious rites; (ii) recommended—e.g. supererogatory prayers; (iii) indifferent—i.e. permitted actions which are neither obligatory nor recommended; (iv) culpable—in which category it would be possible to introduce innovations not admitted by the consensus; (v) forbidden—e.g. the breaking of the fast of Ramadhan without good reason.

This classification is more easily understood in the light of repercussions which the actions were held to have on the after life. Obligatory acts were all those whose non-fulfilment entailed a punishment; forbidden acts were those the doing of which automatically incurred punishment. God would not take account of a culpable action, but would reward recommended ones. Duties fell into two categories on either side of an important division. Certain of them were obligatory for every individual, as, for example, prayer; others, such as the holy war, might not be binding on the individual if a large enough number of fellow-believers were already participating: these were known as duties of suffisance.

Out of such argumentation must have arisen a sense of the need to analyse the Divinity, and it would seem reasonable therefore to suppose that the period of application of dialectical methods to the study of dogma—scholasticism, in Arabic *kalam*—preceded the translation of Greek philosophy. Foreign contributions furthered the advancement of this study, which assimilated all such contributions, reducing them and bringing them together in an original and coherent formulation.

The traditional point of departure was clear. The Divinity was set so high that it might well have created nothing and had no relation with the world; but the Koran postulates God as creator of heaven and earth, of day and night, of sun, moon and stars.

This formulation of the religious idea, transported into the political arena, gave rise to a theocracy. The power of the Prophet in Arabia rested first and foremost on his personal prestige and, for his followers, on the sacredness attaching to him as a prophet. His immediate successors managed to assert themselves more or less successfully. The Umayyads created a dynastic empire on the model of Byzantium, but they none the less remained heads of Arab clans, relying on tribal support. Not until the days of the Abbasids did the first signs of an embryonic political law become apparent, and these were

at first discernible only with difficulty. However, under the influence of Iranian thought, perhaps with some traces of the old Zoroastrianism, the caliph became a sort of supreme pontiff, the authority in whom all religious institutions were centralized. There now developed the Sassanian conception of the heretic as a political criminal (*zindik*). It involved hunting down the man who, refusing to bow to the communal idea, claimed to preserve a certain independence of thought, and it was only too easy to include in this category any individual 'whose religious attitude orthodoxy did not find amenable'. There can be no doubt that the abandonment of orthodoxy was taken as a manifestation of hostility to the government. But after a fierce persecution of these 'enemies' of the state headed by caliph Mahdi, probably under the influence of the Mou'tazilites who were uncompromisingly antagonistic to the Sunnites, and the philosophers, the climate seems to have softened into liberalism.

To govern, the caliph surrounded himself with a vociferous and autocratic oligarchy. To the Moslem mind, responsible for the introduction into social life of democratic, almost communist, ideas, the political authority always remained a sort of emanation from the Divine and Almighty. Even after the dislocation of the caliphate empire, the caliph's powers were everywhere absolute, and, theoretically, no organization intervened between the sovereign and his subjects. One looks in vain in Moslem history for incidents analogous to those marking the clash of royalty and parliament in France, or for anything resembling the jealous particularism of the cities of Greece for such a group as, for instance, the commune.

G. Urban Administration

This is nevertheless a statement that should not be given too wide an interpretation. An urban administration, probably under a sort of prefect, must have existed, if only for controlling the markets, directing worship, and maintaining public order. The papyri testify to the existence of municipal traditions in Egypt throughout the first century of the Hegira, including the presence of the *defensor civitatis*, 'very symbol of municipal life'. At the further extremity, in Persia, the village chiefs, the *dikhans*, had an influence that extended even longer.

Towards the close of the Umayyad régime, the Arabs were disconcerted by crises of what might be called a nationalist character, which broke with the suddenness of thunderstorms. Iraq and especially Iran, moreover, were favourite countries for heretical movements, the list of which is impressive, and the roots of which were in latent memories of the old Persia. It was an easy matter for the Persians to assert their superiority within a community of which they were a part. For them it was less an anguished rearguard action and more a resolute determination fortified by hope. Perhaps 'Persian nationalism could not forgive Islam for having arrived in the baggage-wagons of the

alien Arab'. The *shu'ubiya*, as this offensive against Arab hegemony was called, became a sort of password for new ambitions of every sort, especially political and cultural. The introduction of the Sassanian monarchic idea and the political philosophy of Persia into the Moslem state gave rise to a conflict on the moral and social levels that degenerated into a war of invective. The *shu'ubiya* at any rate had one result in the adoption of the concept of the pre-ponderance of nationality over the religious union. This found its advocate in the ranks of the secretaries of government, whose power had developed apace with the rapid expansion of the bureaucracy and the increased authority of the viziers and the chiefs of the administration. It was the desire of this governmental class to resuscitate the old Persian structure, and to substitute the spirit of Persian culture for Arabic tradition and custom in the urban society of Iraq. Pahlavi literature was at this time providing translators with fragments of juridical writings and, most important of all, those famous guides to the art of living, the *Andarz*, or *Book of Counsel*, which were to have so marked an influence on customs.

The conception of power of the caliphate was not something new in the world, if the definition may be applied to it that has been applied to the Byzantine empire: 'An artificial creation, ruling over twenty different nationalities, uniting them under the same formula: one master, one faith, and orthodoxy playing the part of nationality.'

The subsequent disintegration of the caliphate and the decline in the caliph's effective authority, although it led to territorial dislocation, did not give rise to any religious uncertainties, or at least not until the onset of Ismailian propaganda and the emergence of Shiite states. Although they were divided into a host of principalities, the existence of which depended on the effectiveness of their military contingents, the different population elements, with the single exception of Iran, spoke the same language, and a Moslem was at home anywhere in Islamic territory. The legal treatises spread the notion of universe divided into *dar al islam*, Islamic territory, and *dar al-harb*, the regions of war, and passed on to a survey of the rules of war, the distribution of booty, conduct which was expected in enemy country, and the treatment of prisoners.

H. The Islamic Way of Life

The diverse peoples under Islam had adopted identical ways of living, thinking, and speaking. The spirit of the Koran, the universality of the Arabic language, and the acceptance of similar conventions and principles of social life, had created a pervading common atmosphere which blurred the frontiers of provincial variations. Local groupings did sometimes remain in being because the regional princes needed a degree of public opinion behind them to resist the pressure from Baghdad, and because the expenditure of tax revenue was now a local matter, and the provinces were no longer impoverished by

heavy levies for the Caliphate. On the whole, the mass of the population remained indifferent to the political revolutions, although there were manifestations, sometimes bloody, of Sunnite-Shiite antagonism.

The general instability certainly worked against the development of a constitutional law. Caliphate crises, in their threefold guise, Umayyad, with an extension in Spain, Abbasid, and Alid, not to mention the curious independent dynasties in Morocco, splinters of caliphate territory, with the sprouting of more or less shaky principalities, successive establishments of centralized powers claiming absolute authority—such is the balance-sheet of several centuries.

The disorder was not of recent origin, according to the famous *Letter on the Courtiers* of Ibn Mukaffa, a kind of critical report presented to the caliph Mansūr on the organization of the state, with suggestions for its reform. It contains a discussion of the army, with some penetrating remarks about discipline. Going on to treat of financial administration, Mukaffa, while remembering that the new régime has still to establish itself, advises against entrusting the collection of taxes to the military. Most notably, he utters some serious warnings about judicial anarchy.

It will be seen from this that the first dissensions within Islam were exclusively of a political nature; they posed no problems of faith, and involved neither the personality nor the prophetic quality of Mohammed. The Kharijites were angry and persisted in an all-embracing hostility. In their doctrine every sinner was destined to eternal torment. Certain disinterested casuists sought to formulate theories which they thought might provide a *modus vivendi*. As they put it, a Moslem could not lose the reward of his faith through sin. This was the position of the Murjiites, that is, of those who 'abstain' from abandoning to God, in a spirit of release and hope, the decision as to the eternal life of the sinner.

At about this same period another subject of discussion emerged. It was hotly contested by one group of theologians, known as the Djabarites. Their theory was that human life was governed by a ruthless predetermination. In opposing this view, the Kadarites went so far as to declare that man was the master of his own actions. Not that the Kadarites were rationalists: their denial of absolute predestination was made in the name of religious conscience. Orthodoxy declared that the infinite and arbitrary omnipotence of God might not be countermanded, but, at the same time, with a complete absence of logic, asserted the doctrine of liberty; and it did this more insistently because it was not a notion deriving naturally from the idea of an all-powerful God. 'We unite,' wrote certain Moslem thinkers, 'belief in predestination with energetic decision in action.' Treatment of the 'investiture' theory follows later.

At this juncture the Mou'tazilite movement emerged. This movement was opposed both to the Kharijites, for whom the sinner became an infidel, and to the Murjiites, for whom he remained a believer; it put the sinner in an intermediate category. Mou'tazilism was political in origin. Its advocates were

those who, surveying the conflict between Ali and his adversaries from a speculative point of view after the event, had 'detached themselves' from either party, 'holding themselves aloof'. It was analogous, in the field of thought, to what Kharijism had been in action.

They also took the initiative in another direction. The first results of the translations from Persian had been to encourage the re-emergence of a latent Manichaeism, or at least to foster a measure of indifference in religious matters that was tinged with disrespect towards Islam. While the establishment strove to stifle the heresy by persecution, the Mou'tazilites came forward with procedures, drawn eclectically from Greek philosophy and Christian apologetics, which were capable of disposing finally of the dualist theses and replacing them by a morality based on the Koran.

In this connection, the Mou'tazilite standpoint should be made clear; for there has been a tendency to stress the fact of the banishment of the group from the community by the traditional school of thought, and hence to attribute to it a free-thinking attitude which in fact it never adopted. Mou'tazilite doctrine based itself on the Koran, which it vehemently defended. What was original in it was the invocation of reason as a means of explaining and strengthening the faith. The individual Moslem conscience was held to be shaped in complete accordance with the universal conscience of Islam. In principle, this was not a matter upon which the believer had to bring reason to bear.

One of the leaders of the school was a fervent protagonist of atomism, which he contrived to reconcile with the divine power. It was an atomism derived most probably from Democritus and Epicurus, with perhaps traces also of Indian influence, but thoroughly designed and adapted to fit in with the Moslem dogma of creation *ex nihilo*, which was at all costs to be preserved.

It is noteworthy that while the Koran offered a dogma and an ethical code it held out neither an explanation of the world nor a theology. There were certain phrases, somewhat equivocal perhaps, which might well, as far as the nature of God was concerned, conduce to anthropomorphism: 'God suffers hunger and sickness, gets angry, experiences joy, laughs, loves, hates, receives alms, and has a form, like a human one, with a face, hearing, sight, hands, and fingers.' On the other hand, the Holy Book (XLII.9) states categorically that 'there is nothing resembling him'. This was a point over which Mou'tazilite polemic became passionate. Taking their stand on the concept of the absolute perfection of God, the Mou'tazilites would admit of no other attribute for him other than unity, and launched a campaign against the rather heavy anthropomorphism of certain theologians. Logically, they rejected the eternity of the Koran, envisaging it not as the word of God but as man-made; and they taught that man was master of his actions, good or bad, and that, in consequence, reward and punishment were inescapable.

Mou'tazilism was essentially serious and austere, a movement based on logical argument and imbued with a real humanism. It offered conclusions

that were of an eminently consoling nature, and were governed by the idea of the extreme justice of God. Protected as it was by the establishment, Mou'tazilism might well have become accepted by the community. It failed to do so primarily because of two things: the unpopularity among theologians, particularly those of Arab extraction, of the theory of the creation of the Koran, and the basely inquisitorial methods, as ludicrous as they were cruel, by which the caliphate tried to impose it. As a result of this despicable persecution, however, Mou'tazilism did manage to penetrate the masses, while other religious controversies never reached beyond the confines of a certain cultivated set or, as we should say, the professional élite.

In time, conflict between these factions ceased on fronts other than the purely doctrinal. Each had found a place for itself in relation to the Moslem community. The Abbasids, taking advantage of the system of heredity established by the Umayyads, reinforced it, in spite of protest, with a declaration of their relationship to the Prophet through the Agnates, thinking thus to eliminate the Alids, whose descent was from Mohammed's daughter, Fatima. The Alids, in whose view the human race could not do without an imam, considered him to be chosen by God from their line. The Kharijites and Mou'tazilites, republicans before their time, wanted to see the head of the community chosen by election.

The religious thought of Islam remained thus in an effervescent state, seeking foundations in the sacred texts—the Koran and the *hadiths*—but at the same time, because of the translations of ancient philosophers, attempting to base itself on reason. Conflicts of ideas were henceforward to take precedence over all other questions, and, indeed, to dominate them.

2. PHILOSOPHICAL TENDENCIES

Since before the fourth century the Syrians had been acquainted with Greek history, and their thinking was imbued with Greek ideas. There were Syrian translations of scientific and philosophic works, among which were the works of Aristotle; and it was in the Syriac versions that these made their way into the intellectual life of Islam. 'The Arabs,' as Renan justly remarked, 'in their initiation into this kind of thinking, had Aristotle as their master, but not by a choice in which they had had any say.'

The discovery of the philosophers of antiquity had thus taken place through a Christian intermediary before the advent of the Moslem translators. The Syrian Monophysite, Yahya ibn Adi, for instance, was probably the ancestor of the Moslem atomists; and credit goes to another Christian for the translation of a work which was to pass via the Moslems into medieval Western Europe. It went under the title of *Aristotle's Theology*, but is now known to have consisted of a more or less faithful paraphrase of Books IV and VI of the *Enneads* of Plotinus. In this book, for instance, Farabi came upon his theory of emanation, by which he explained the creation of the universe. Under the

caliph Mamun, educated society acquired a liking for philosophic studies; dialectics became the fashion, and each school composed works in support of the doctrines which it favoured.

One curious group which had some little influence on the development of Moslem ideas was that of the Sabaeans of Harran. This group had its ties still with ancient paganism—including a cult of the stars—but, as the result of contamination by Gnosticism, it tended now towards a not very clearly defined monotheism.

'The third century of the Hegira saw the birth of the "romance of the Sabaeans", as a result of which official contact was established between Islam and the school of Harran. There followed a spread of the spirit of scientific enquiry, linked with the idea of a progressive instruction, by which the initiate was held to be led, through a gradual revelation of the equal validity of all doctrines and creeds, to the point at which he might embrace their totality with perfectly intelligible evidence, without violence to the soul within. This conception, which made its appearance in the political arena in the time of the Fatimids and, in the scientific field as a result of the work of the Brothers of Purity, ran directly counter to the Koranic faith, the very formulation of the creed.' (Henri Corbin.)

The Sabaeans enjoyed the protection of the Caliphate on account of their scientific activity, and the sect did not finally disappear until 1032.

Notwithstanding these antecedents, there was no link-up of Arabic language philosophy with any anti-Islam opposition. The Arabic philosophers addressed themselves to reconciling with reason, not the faith, but the religious law. There is no evidence that these thinkers ever bought the Greek philosophic concepts to bear directly on Islamic dogma. Their concern was not with any reformation, but with the firmer grounding of orthodoxy. Progress in philosophic studies should, in their view, conduce to the greater glory of religion; and logic, while permitting the passage from the known to the unknown, to a clearer discernment of good and evil. They simply sought to reinforce by intellectual demonstration those truths which divine revelation had put beyond question, an aim they pursued sincerely and with undoubted piety. An Arab writer has succinctly expressed the situation: 'The religious law is therapy for the sick, philosophy for the healthy. The two accord superlatively, like cloth and lining, neither of which can do without the other.' Aristotle was for the Moslem world the revelation of a new concept of rigorous intellectual method and, at the same time, of a certain contradiction with its traditional ways of thought. The Islamic 'philosophers' saw in the antinomy no conflict of reason and faith, and their attitude to Platonist teaching was likewise one of expectation of ideas not inimical to Islam. These Islamic philosophers are, therefore, strictly speaking scholars dependent on Greek philosophers, but they seem to have taken from these forbears only what was in accordance with their aims. (Pl. 21a.) The title of one of Farabi's works makes a clear assertion of the fusion of the ideas of the two great minds of antiquity: *Concordance of*

the ideas of Plato and Aristotle. These thinkers had not originated this tendency; they had found it in Neo-Platonism, and it was in this synthesis that they sought their proofs of religious facts. 'Avicenna's intention was always to honour the Muslim faith and declare its authority', and Averroes was to quote the Koran in defence of Aristotle. Razi alone took a hostile line, to be followed later by Abul-Ala Ma'arri.

In this philosophic departure we can undoubtedly discern the influence of Christian dogmatic thought, which had already stirred some of the problematic deep waters with which the Moslems were now to find themselves faced. Later came the worthy endeavours of the Mou'tazilites, whose sectarianism diminished their lofty doctrinal position. Certain landmarks are here unmistakable. The movement, initiated by Kindi, acquired strength with Farabi and reached its culminating point with Avicenna. The reaction was to come from Ghazali, the very real endeavours of Averroes having, as far as Islam and the East were concerned, very little effect. As in the antiquity which they took as their guide, the Moslem philosophers were primarily scientists; Averroes was alone in having a juridical background.

It must be admitted that the position of the philosophers on doctrinal questions was often ambiguous—perhaps designedly so. They were particularly fond of essaying the allegorical interpretation of the text of the Koran. Without denying the creation of the world, for instance, they were averse to taking the story only in its literal sense. Certain of their propositions represented a danger to doctrine—that the created world might be co-eternal with the Prime Mover, that every movement must have an ending. Anxiety grew as Avicenna admitted the resurrection of the body in a work for the public at large, and in another intended for more selective circulation, denied it. For a number of philosophers, it should be added, personal immortality was regarded merely as a sop for the masses. They recognized the higher level of insight of the prophecy, and saw in it perhaps a wisdom that was superior but essentially human—the wisdom of a sort of head of state and law-maker, seeking to establish the 'ideal city' of Plato. For Moslem orthodoxy, however, no society could exist without the prophecy.

Arab thought awoke to philosophy with Kindi, an Arab born, of scientific training and Mou'tazilite convictions. Kindi essayed to combine the irreconcilable Aristotelian and Neo-Platonic ideas, and his theory was accepted by philosophers who came after him as a rational explanation of the universe. His concept is derived from the famous apocryphal Aristotelian work, *The Theology*. He develops the theory of a duality in man: of a soul governed by the celestial spheres in so far as it is linked to the body, but, in the measure in which it attaches to its spiritual origin, an emanation of the soul of the world, free and independent. The Moslem community rejected Kindi's philosophic system as heresy, since it ran counter to orthodoxy on three major tenets of faith: the creation of the world, Providence, and the resurrection of the body.

Farabi may justly be called the founder of a philosophic school. It was he

who first gave theories a distinctive presentation and created what has been termed Arab Peripateticism. A synthesis of Aristotelian and Platonic ideas enters into his conception; he maintains as an article of faith that there is no shadow of contradiction to be found between Plato and Aristotle. He does not seek to realize this accord of the two thinkers after the neo-Platonist fashion, but rather in demonstration of the harmony of the thinking of both with Islamic religious doctrine. 'To Farabi may be traced that all-important event in the history of philosophy: the meeting of the great Greek metaphysics and the monotheist assertion of Islam.' (Louis Gardet.)

Farabi takes over the Platonist theory of emanation—that is to say, the creative development of the world in continuous stages originating from God, and its conservation by the Providence of God. The One, the absolute being, contains within itself all things, producing Intelligence by emanation. This in turn, by a similar process, gives rise to the universal soul, and this soul brings to life the Universe and the human soul. His *Model City* derives from Greek philosophy, and is undoubtedly based on Plato's *Republic*. Certain of his observations on violence and on human societies show considerable insight.

With Farabi came a view of philosophy in which it supplanted the *kalam* and embraced all the problems raised by Islam. The conceptions of prophecy and revelation, the conditions of the after life, and the data of eschatology, became subjects for the philosopher.

Razi, a great medical doctor and clinician, had a far-reaching mind, but a disturbing one. His conception of the world was based on the theory of the Pentad, with five eternal substances: (i) God the Creator; (ii) the Soul of the world; (iii) primordial Matter; (iv) absolute Spirit; (v) absolute Time. These were ideas from Plutarch's commentary on Plato's *Timaeus*. Razi's system envisaged matter in the primitive state, before the creation of the world, as made up of random atoms.

There was another facet, more serious in its implications for Islam: Razi considered the prophetic mission as in essence democratic. For him all men were equal. 'It is unthinkable,' he wrote, 'that God should have singled out certain men above the mass of others to confer on them a prophetic mission and to make them, as it were, guides of humanity.' He heightens the tempo by attacks of singular boldness on all the positive religions, ranging himself against religious dogmatism of any kind. It has been conjectured that this standpoint may have influenced the famous *De Tribus Impostoribus*, so dear to Western rationalists from Frederick II onwards. The dismay which such an attitude produced among pious Moslems may be imagined.

Avicenna (in Arabic, Ibn Sina), one of the greatest scholars of the Middle Ages, stands out not only above his contemporaries, but as one of the peaks of Moslem culture. Scientifically and philosophically he is the equal of his precursors, and in literary quality he is their superior. He was a remarkable man, in whom intellectual power was matched with a clarity of exposition which was induced by a sound scientific education.

His mind had been formed by science and Greek thought, but his assimilation of ancient philosophy was principally through Farabi. He was imbued with the ideas expressed in the famous Aristotelian *Theology*. He was aware that its authenticity was questionable, but nevertheless, in commenting on difficult passages, he considered only the ideas regardless of authorship. 'With Avicenna,' writes M. Louis Gardet, 'we have no mistrust or minimization of the religious law, but an integration of it in an emanationist monist view of the world.' In his work the way is opened to admit belief in creation and the survival of the individual soul. One reflection shows clearly that he counted himself a believer. When he had grasped the meaning of metaphysics, he wrote: 'The next day I went to the mosque as an act of gratitude, and gave liberally to the poor.' In his philosophical novel, *The Living, The Son of the Wakeful*, Avicenna originated the theme of the isolated individual who proceeds from effects to causes, which was to be taken up again later by the Spaniard, Ibn Tufail.

Two quotations from Avicenna illustrate his position fairly clearly: 'Philosophy,' he declared, 'is the perfecting of the human soul through the knowledge of things, and the affirmation of speculative and practical thought in the measure of human possibilities.' And again: 'The first elements of speculative philosophy are received from the masters of the divine religion through acquiescence; and, in like manner, practical philosophy utilizes revealed divine law and the perfection of its definitions.'

In the opposite camp, the theologians were of one mind. For the traditional school, discussion, where the problem was a religious one, simply had no validity. That dialectics should be brought in to furnish proof of what they believed was revealed truth was to them monstrous and blasphemous. The concept of the divine omnipotence, the source of the life of the universe, was a sacrosanct dogma. They believed implicitly that this world here below was subject to laws which were dependent on the good pleasure of the Divinity. They held steadfastly to these 'customs of nature which the philosophers have styled laws'; for Islam was, to say the least, extremely reluctant to admit of secondary causes. The Koran, in which this idea of 'the custom of God' had originated, also declares it to be unmodifiable (XLVIII. 23). This was a creed to which Islam committed itself very deeply. 'Everything that happens in the city, even to the fixing of provision prices, proceeds from the direct and positive decree of God.' As a result, the Moslem world continued to live by an inviolable lunar calendar,² although they were obliged to institute another, solar calendar, for the practical requirements of finance and agriculture.

There was no question of seeking contact with the Divine other than by revelation, any more than there was of permitting intellectual consideration of religious matters. At all costs independent reason must not outweigh revelation. Standing against Aristotle and the philosophers, the theologians denied the eternity of matter and the world. For them, the universe had been created out of nothing by an act of divine omnipotence.

Greek philosophy was suspect, however, for a much simpler and more fundamental reason—it was a foreign importation. Islamic unity was being subjected to heavy strain by the conflicting pressures of the diverse systems which were now emerging. Philosophers, like the men of science, medicine, astronomy, and mathematics, were engaging freely in discussion with non-Moslems. The influx of Christians, Jews, pagans of Harran, and Zoroastrians, both into cultivated society and into the administration, was threatening an Arab political hegemony which the *shu'ubiya* had already weakened. The religious groupings were forced to enter on a defence of Arab studies on the apologetic level, since these constituted the basis of the Koranic sciences. To offset the intellectual activity of the *shu'ubiya*, there arose a new literature which delved into the history and institutions of Arabia before and after Islam—a counter attack of force and weight that was to check the danger implicit in the *shu'ubiya*.

The superimposition on all this of an Irano-Hellenistic heritage represented a real danger, and an injunction had to be laid on the philosophers to curtail even their attempts to arrive at a reconciliation of their principles with Moslem law. It should be added that the bitterness which was evinced in Sunnite circles was based on the fact that the Shiite sects were among the first to be influenced by Greek thought. Thus Islam, as it had emerged from the teaching of Medina, stood opposed to any examination of the revelation, the divine word transmitted in Arabic, in the light of the thought of antiquity. It was a score on which no compromise was possible. The sacred texts must have their authority preserved entire. The submission of this authority to any external norm, even one that would conduce to its greater prestige, was inadmissible.

This irreconcilable divergence has been well summarized in a comment by Paul Kraus: 'The Islamic philosophic tradition, while orthodoxy looked for its ideal state to the past, cherished a steadfast idea of progress.' Of the period it is happily true to say that 'in the level it reached in its own internal development, in its encounter with Greek thought and the use it made of it, Moslem thought continued to play its part in the general progress of culture.'

Orthodoxy had also to keep a watchful eye on the political activity of the Alids. Ali's own assassination, and the murder of his son Hussein, would have sufficed to excite an active piety among Moslems faithful to his memory; but there was also the ruthless harrying to which their descendants were subjected, and the consequent lengthening of the list of the sect's martyrs with each generation. The Shiite party (that is, those who did not wish to forget), harbouring grim resentment and proudly pursuing any and every programme which was likely to promote division, carried matters so far that no durable union could ever be achieved. But the full history of the variations of the Shiite churches has yet to be written.

The Shiites were in agreement on one point. Against the old Bedouin tradition, which they quickly discarded, they asserted the divine right to the

Caliphate of the family descended in direct line from the Prophet. The Shiites had already had experience of 'underground' existence under the Umayyads, and under the Abbasids their technique in intrigue had acquired subtlety. Toleration for those whose assistance had procured them the throne was no greater under the Abbasids, and the Alids withdrew once again into secrecy. Their committees, based on a secret initiation, received twofold support in appealing at one and the same time to the baser passions of the plebeians and to the purified convictions of the intellectuals.

Although at first a political faction, a temporarily unsuccessful Shiism took on a more religious nature, and devoted itself to lamentation. Then, under the influence of Iranian ideas, certain circles bethought themselves of the manifestation of the divinity in man. The imam of the community, who had to be of Alid stock, became the Mahdi, a sort of semi-prophet, whose advent would improve the world. This belief in a man predestined to establish the reign of God on earth assumed pride of place in Shiite ideas. Some looked to the seventh imam; these were known as the Seveners or Ismailians; others, known as the Twelvers or Imamites, gave their allegiance to the twelfth in line. The Mahdi was in a state of withdrawal; he was the Master of the Hour, the awaited Imam, one day to return.

The sequence of events in which Umayyad power gave way to Abbasid domination, and the Moslem world was stirred up by Alid preaching, proceeded from diverse factors, among them anti-dynastic feeling, discontent among the newly converted, and the Messianic hopes cherished particularly in Iran.

A point in time was bound to be reached when these currents of unrest would shatter the uneasy calm. It came about the year 890, when an insurrection broke out in lower Mesopotamia and spread speedily and relentlessly throughout the Near East and Egypt. This was the Karmatian agitation, which gave rise to the Ismaili doctrine. The messianism centring round a lost member of the family of Ali served to camouflage the anti-religious aspect of the movement. It must be noted that the Karamatians were for the most part not Arabs but natives of Iraq (that is, Nabataeans), and that they belonged to the Aramaic race, a people of peasants and serfs, who were held in contempt by the Arabs. Karmatian propaganda appealed to a population which the administration had made discontented, mistrustful and even vindictive. The prevailing ideas among the middle class of the period are summarized by a contemporary writer: 'Moslems fall into four classes, sovereigns, viziers, dignitaries who work for the welfare of the state, and educated men of an intermediate status. Below these, nothing but a dirty froth, a muddy stream: not men, but animals, with no thought beyond eating and sleeping.'

Socially, the movement was egalitarian and communist; politically, it represented the reassertion of legitimist preaching in favour of a descendant of Ali, a fact which was only later to become apparent. But it was a movement which brought with it a threat not only to the social *status quo*, but also to religious

orthodoxy. This was an extremely dangerous threat which came in the guise of what might be termed 'religious relativity'. The Karmatians preached the fusion of all rituals and all cults on a rational basis.

The Ismailians set up agencies and lodges almost everywhere, and, by methods which were sometimes reprehensible, acquired considerable political power. The leaders doubtless derived a secret satisfaction from contriving to keep their mysteries secret from the people. In all probability the Karmatian hierarchy, in so far as one existed, thinned out quickly, and a sacerdotal class, which had a monopoly of knowledge, emerged. It is fairly clear that initiation rites were soon relegated to a position of little importance, being regarded as vulgar. Further up the scale, however, under the influence of philosophic ideas, the amalgamation of all dogmas was advocated, which in effect amounted to the negation of them all. The result was a system peculiar to itself, at the head of which was an unknowable God, the creator of Reason, from which emanated the universal Soul, which, in turn, created Matter. These three principles, in conjunction with Space and Time, produced the movements of the spheres. The total pattern also included certain Gnostic tenets, which included a belief in the incarnation of Reason and the universal Soul in man.

Through two centuries, one family, the Fatimids, succeeded in establishing its power first in North Africa and then in Egypt, and charged itself with the task of disseminating Ismaili propaganda. One of the caliphs, named Hakim the third of Egypt, disappeared in mysterious circumstances (1021). This event was sufficient to give rise to new beliefs, which were the more readily evolved because the individual concerned had declared himself to be God, although this, as we have seen, was not in itself an exceptional aberration. The divinity of Hakim was preached by a certain Darazi, who emigrated from Egypt to Syria. It was from Darazi that the Druses derived their name.

It would perhaps be attributing too much importance to them to associate with this effervescence a rather curious group in northern Syria, the Nosairis. This group was syncretist in belief and cult, semi-pagan, crypto-Moslem from a desire to be left in peace. Their historical importance was minimal but mention of them is made here because it was they who deified the caliph Ali.

By the middle of the eleventh century, the Karmatians had ceased to be a threat as would-be changers of society. The Fatimid lodges had turned conformist and the caliphs succeeded each other without difficulty on the throne of Egypt. Certain dissident elements, however, proved themselves to be specialists in the art of terrorist assassination. They have remained famous as the Assassins, their name being a corruption of *Hashshashin*, 'eaters of hashish'. the plant with which members of the faction allegedly used to intoxicate themselves before committing their crimes. The first Great Master of the Assassins, Hasan Sabbah, established himself in 1090 in the mountains around Kazvin. In the whole history of Islam he was probably the first advocate of violence, declaring with a total absence of hypocrisy that anything was permissible.

Another group, active alike against Moslems and Crusaders, operated in the mountains between Hama and Latakia.

The Assassins were connected with a philosophic sect which professed to view the Revelation as an allegory and a source of hidden meaning. They were known as the Batiniya, and it was to combat their ideas rather than their political influence that Ghazali brought his erudition to the defence of orthodoxy.

The Ismaili scientific breviary was actually the work of a handful of scholars who had formed themselves into a sort of secret community for mutual material and intellectual aid, which was inspired by considerations both political and mystic. These 'Brothers of Purity' were the first intellectual society whose activities found expression in various publications, although inter-religious assemblies had been taking place in Baghdad since the advent of the Abbasids. (Pl. 21b.) A historian speaks of periodical conferences held there under the Barmecides and attended by doctors drawn from Sunnite, Shiite, Kharijite, Murjiite, Mou'tazilite, Imamite, Zoroastrian, and other sources. It would seem that equal pressure was being generated by the intellectual ferment in Basra, where participation in discussions was opened still further to Buddhists, Manichaeans, and even avowed atheists. Not to over-dramatize the picture, let it be said that there existed in the Abbasid capital a sense of solidarity and common interest among intellectuals that made religious confession a matter of relative unimportance.

The Brothers of Purity belonged to a brotherhood of philosophers and men of science who together produced a sort of encyclopaedia consisting of fifty-two treatises on different specialized subjects and a 'synthesis volume'. These *Epistles*, as they were called, presenting systematic and extensive expositions of mathematics, logic, the natural sciences, psychology, metaphysics, mysticism, astrology, and magic, awakened the minds of Moslems. The names of the authors are not known, nor anything about them, save that they lived in Basra.

These scholars were eclectic, and as such were suspect alike to the philosophers and to the masters of orthodox theology, who denounced them as impious. In fact, they would seem to have been religious in spirit, although their philosophy does perhaps interpret dogma in a somewhat high-handed manner, which in the long run tended to nullify it. It is not difficult to dismiss them as rationalists; but what emerges none the less is a doctrine of great purity and elevation. It was a kind of aesthetic pantheism, based on the general harmony of all the components of the world, and willed by the Creator, since he is the source of all benevolence. Moreover, the encyclopaedia admirably typifies the egalitarian toleration of Karmatian propaganda.

The Brothers of Purity were at no time in a position to influence the teaching of philosophy or theology. Their writings, however, were widely read in lay circles, and their theories gave rise to numerous sects. Orthodoxy was under no illusions about the situation, as witness the burning of their writings in Baghdad in 1101 and 1150.

The influence of Razi may be discerned in the Brothers' attitude to the divisions within Islam. 'All these sects curse and vilify one another as infidels', one passage runs. 'The matters on which they are divided and on which argument is over-pressed give rise to hatred. Despite the bloodshed and destruction, the number of sects multiplies. If, instead of disputing, men would but come together to try to reach understanding and to love and help each other, then indeed they would be fulfilling the desires of their Prophet.'

The philosophers, in the name of reason, and the Shiite factions, for political and emotional reasons, finally managed to secure a position on the fringe of orthodox Islam. At the same time, strict Sunnism found itself taking a stand against another category of independents and individualists.

Certain orthodox Moslems cannot have been reassured to read the definition of the ideal man put forward by the Brothers of Purity: 'The morally perfect man should be of eastern Persian origin, of Arab faith, of Iraqi education, and of Hebrew subtlety. He should have the standard of conduct of a disciple of Christ, and the piety of a Syrian monk; he should be the equal of a Greek in the sciences and of an Indian in the interpretation of all the mysteries. Lastly, and pre-eminently, he should live his spiritual life like a Sufi.'

Mysticism was no novelty, and it has been pointed out that 'the Christian mystical literature emanating from the monasteries of Mesopotamia shortly preceded the emergence of a Persian Moslem mysticism, and was doubtless not without influence on the elaboration of the great mystic syntheses of Islam.' (Guillaumont.)

It is quite conceivable that the mystic thinkers should have been influenced by ideas from outside, as, for example, from Christianity. In explaining the genesis and developments of mysticism, however, it would seem idle to devote too much time to research into possible contacts. There is an apparently normal path for the human mind, which it takes in other civilizations also. Certain Moslems believed simply that it was the vocation of man to devote himself to the love of God, albeit they were not always certain as to the technique to follow.

Asceticism was practised in the very early days of Islam as the part played by the readers of the Koran, known as the *kurra*, under the Umayyads, testifies. These first collectors of traditions, who made themselves responsible also for the transmission of them by benevolent instruction, led lives of sobriety and even of poverty; and they were not long in raising the banner of austerity. From this time on, we find votaries, weeping penitents, and popular preachers. Ascetics had from the beginning taken to retiring to the corner of a mosque, or to its minaret.

Community life may have had its origin in the small forts that studded the frontiers of the Moslem world. A period spent in a *ribat* was a contribution to the defence of newly won territory against raids and incursions from the Byzantines, or to the task of containing the Berbers. The Holy War soon gave rise to the idea that piety was as important to assuring victory as the bearing of

arms. Military service being thus dedicated to God, the ascetic attitude became obligatory and we read of 'saints' living apart in cells and preparing their own food.

The first to be called a *sufi* was a pious citizen of Kufa, who died in 776, and the term later came to be used collectively of a group among the ascetics of this same town. A century later it was taken to mean the community of mystics in Baghdad and, in the tenth century, it was applied to mystics in the whole of Iraq. It has been generally accepted that the etymological derivation of *sufi* is from *suf*, meaning 'wool', the first Moslem ascetics having elected to wear the woollen habit, or frock, probably in imitation of Eastern Christian monks and hermits. (It should be noted, however, that wool was in any case the raiment of the poor, the penitent, and the convict.)

It was not long before originality of attire began to be sought after for sensational effect. Ibn Karram and his disciples, for instance, wore newly flayed sheepskins, tanned but unsewn, and surmounted by tall white hats. This group established the first convent in Jerusalem and thus founded Islam's earliest religious order of mendicant monks and teachers, known as the *Karramiya*. In so doing, they probably supplied the prototype of the *madrassa*.

Mysticism in its beginnings, as we have seen, tended to have an ascetic bias. Only in the ninth and tenth centuries did Sufism take on its more pronounced metaphysical and theosophical character. Religious sensibility soon asserted itself, and the mystics looked for possibilities of exaltation. In Islam, as in all other cultures, 'men could find only one set of terms to express the mystic union, that of sexual love'. To this the Sufis also resorted, though using a somewhat hermetic language and, endowing certain current terms, with a special technical sense.

'The essential in the mystic life is the union with God.' This was the theme of the Sufis' preaching of the annihilation (*fana*) of the will of man before God, or, more precisely, of the escape from contingent existence towards the Eternal Absolute (*baka*). They urged mortification and penitence, and prostrated themselves before divine omnipotence. They urged the believer to present himself before God as the corpse before the body-washers.

Having said this, it may be readily granted that Sufism 'is not susceptible of any simple explanation. It grew up at one and the same time over an area extending from the shores of the Mediterranean, where it was in contact with Christianity, to central Asia, the scene still of thriving communities of Mazdaeans, Manichaeans, and Buddhists; it emerged from among movements which from the beginning had contained non-Islamic elements, Karmatians and Ismailians among others.' (Henri Corbin.)

The last paragraph may be illustrated by brief reference to one or two of the most notable of the mystics of the early days of Islam. Hasan Basri was the most striking personality of the first century of the Hegira, whether one considers his ascetic piety, his profound culture, his courageous attitude, or his effective influence. In him, indeed, the most diverse movements of Moslem

thought find their justification. He was in a sense the initiator of Moslem theology, and conveyed his teaching in language that was impeccable. His enrichment of the art of oratory was a matter of general acceptance. His political doctrine was a balanced one, and sketched the first outlines of Sunnite orthodoxy, at an equal distance from that of either Kharijites or Shiites. On the question of human free will his stand was subtle; he propounded the solution of divine 'investiture' of man as a free agent. He preached respect for the established order, not from opportunism, but because of a higher sense of the need to preserve Islamic unity. The instinct that made the mystics claim him as one of themselves was sound. The fear of God was so strong upon him that hell seemed to him to have been created for him alone. It should be made clear here that in Islam the duty which the believer owed to God was adoration, but this was not sufficient. The truly pious man feared God to such an extent that it might be said of Islam, as of the religion of Babylon, that absence of fear was synonymous with sin. What was essential for Hasan Basri was to revive the religious sentiment, to put maxims into practice rather than to indulge in obscuring arguments about them *ad infinitum*. The Phariseeism of the jurists also came under his fire. His moral doctrine of renunciation, which the Sufis were to make their rule, certainly had its roots at this period in Islam itself, and owed nothing to external religious influences.

Muhasibi (c. 857) left a complete manual of the inner life: a method by which to develop the faculty of self-examination, the strength for resistance to temptation, and an understanding of the means of attaining to true devotion. His maxims were paraphrases of the Sermon on the Mount, and reveal the possible influence of Christianity, containing as they do, the Parable of the Sower. The accent is always on internal subjective purification and the renouncement of desire.

Contacts with Christianity also influenced Djunaid (c. 910) whose syntax, encumbered with too many parentheses, recalls the Aramaic style. Djunaid had donned the robe of the Sufis, which the government finally forbade him to wear. In fact, the whole world of traditionalists ranged itself against him, if only because of his declaration of faith: 'We have learnt Sufism not by listening to 'it is said that this. . . .' or 'it is said that that . . . ', but by going hungry, renouncing the world, enduring separation from those familiar to us and depriving ourselves of the things which give us pleasure.'

Halladj, his disciple, was of Mazdaean origin. He represents the *summum bonum* of personal experience in religion, and made the love of God an integral part of devotion and the very life-centre of the cult. It was not long before he incurred excommunication, and then imprisonment. He emerged eight years later, but only to go to his crucifixion in 922. In many respects the proceedings taken against Halladj and his subsequent condemnation were justifiable in view of his theory of divine love. To regard the love of God as essential is for the Moslem theologian nonsense. What must be offered to God is the formula of praise as prescribed in the revelation by God himself, with or without love,

the only indispensable accompaniment being faith. It is only fair to add that Halladj also held ideas about dress that affronted decorum. He appeared sometimes in a hairshirt, at others in dyed robes, or in military dress, or in a motley of rags and a coarse calico loin-cloth. It was a studied flouting of convention. Halladj's attitude was unquestionably of Moslem inspiration. His vocabulary and the framework of his system, as well as the whole flight of his thought are the product of solitary, fervent meditation on the Koran, to the exclusion of all else.

In time, Sufism came to embrace personalities of the most diverse kinds—mystics, seers, thaumaturgists, hermits, and combatants in the holy wars—and their teaching, methods, spiritual disciplines, and visions likewise display an extreme variety. There were also fanatics who rolled in flames, or took part in wild dances. A great deal of the mysticism was with good reason suspected of pantheism; and much of it professed the greatest disdain for all positive religions, Islam included. The equating of all religions in the end led inevitably to total indifference, and many Sufis finished up as completely disillusioned sceptics.

The danger in Sufism lay in its rejection of the traditional cult except as a mere accessory, and its tendency towards the notion of an impersonal God. Moreover, the 'establishment' could not tolerate the mystics. It looked upon these passionate individuals, with their avowed allegiance to subjective ideas, as constituting a threat to Islamic unity. Sunnism waged war on the philosophers for seeking truth by reason, and on the mystics for claiming that they could by their own efforts achieve knowledge and the love of God. Moslem law was concerned only with the 'outward relations' of man with the Divinity. If intention had a part to play, it was intention envisaged as will rather than as emotional prompting.

By this time, a triumphant Mou'tazilism, engaged by the order and with the support of the caliph in persecuting dissenters, had given way to a Mou'tazilism which was driven in on itself and forced underground. On to this scene came Ash'ari, one of the major figures of Moslem theology. Prior to his manifesto, the Mou'tazilites had had a monopoly of the dialectical method, against which their adversaries could advance only the written traditions. The validity of discussion itself was disputed. The intrusion of reason into the domain of faith was impious, and, in any case, useless. Ash'ari, who had been schooled by Mou'tazilite teachers in just such methods of argument, was well equipped to meet them on precisely their own ground when he advanced his contrary ideas.

The parting of the ways with the Mou'tazilites was definitive from the outset. To the question, 'What is the basis of the obligation to believe in God?' the Mou'tazilite answer was: 'Reason'; Ash'ari's answer was: 'Thus it is written'. The standpoint of Moslem orthodoxy may be summarized thus: 'God looks to human reason to be understood, not to be judged.'

Ash'ari asserted the transcendence of God, and the inadmissibility of

anthropomorphism. That God had hands and eyes must be accepted, since these were spoken of in the Koran, but, of the modalities, man was left in ignorance. Ash'ari sought to establish the reality of the attributes of the Divinity: unity, knowledge, power and will, all attributes distinct from his essence. A natural corollary from Ash'ari's thinking would have been complete determinism, correlated to the divine will, but he avoided this by compromise; he discerned in the creature a certain faculty of 'acquiring' his actions, in virtue of which, though they were in fact induced by God, he might regard them as his own. A final point of dissension from Mou'tazilite tenets lay in Ash'ari's insistence that the Koran was the eternal word of God.

Ash'ari was the virtual founder of Moslem scholasticism; yet he had little or no authority in his lifetime. It was not until a century after his death that, as a result of a movement initiated by the great Seljuq minister Nizam al-Mulk, he acquired the status of the acknowledged ecclesiastical authority. Once a rationalist himself, Ash'ari was concerned only to temper the effect of reason in religious discussion: he was a 'middle of the road' man. His ideas were seized on by the pious bigots, and it was this group that precipitated the decline of Islamic intellectual life. Its pietist rigour could lead nowhere but to the enslavement of thought; its ideas were imposed on the believer in the form of a catechism.

The process begun by Ash'ari was carried to its completion by Bakillani, whose theories were directed essentially to the establishment of the activity of God, unique, universal, eternally creating. He regenerated the Mou'tazilite thesis of atomism, as the 'natural philosophy' ideally suited to safeguarding the requirements of dogma, in particular those concerning God's infinite liberty and the omnipotence of virtue of which he is the sole motivator. It was an atomism which recognized only the invisible atom: to enter existence this had to enter into an accidental; and the juxtaposition of several atoms gave substance, or inert matter. Atoms were contingent, and so were accidentals, and therefore so also were the bodies produced by them. Atoms, accidentals, bodies, were created directly by God every instant, since they existed only for an instant. The atoms were not only atoms of space, but also atoms of time. All mental or physical manifestations of the universe in space or time had their source in a multitude of monads. These monads had a position only; they had no mode, and did not touch each other. Between them was an absolute void, and the same was true of time. Bakillani was thus first in affirming the existence of the atom and the void, going on to declare that accidental was not superimposed on accidental, and that one accidental lasted no more than an instant in time. This inconsequentiality is peculiar to the Moslem mind, and explains why these people did not believe in laws of nature; they had no sense of 'law'. Their atomism corresponds perhaps to a state of mind; an attitude which was also productive of the tendency, among Arab historians, simply to juxtapose facts rather than to work out their relations.

Mention has been made of Nizam al-Mulk. Through the influence of this

man and his *Political Testament*, heads of state were, particularly after the fall of the Fatimids, to be rid of uncertainty, and the Islamic community was organized on the twofold basis of the Koran and the tradition. It was a new attitude which was manifested in many fields. In religious life itself it was marked by the institution of the *madrassa*, with its reformed and integrated methods of instruction, and by the almost universal re-establishment of Sunnism. It even showed itself in monumental inscription by the abandonment of Kufi script for rounded characters.

Some fifty years before, a treatise on constitutional law by Mawardi had appeared. It was a focusing, perhaps more theoretical than practical, aiming at the establishment of a sound doctrine of political Sunnism after the disorder caused by the Buyid princes, who were Shiite by conviction. It has been noted how seldom this type of work figures in Moslem literature, 'since the fundamental concepts of Islam's politico-religious philosophy are in fact the very substance of the most widely circulating and elementary manuals of religious law.'

The multiplication of commentaries on both the Koran and the traditions, the philosophical writings, and the great diversity of schools and sects, had led inevitably to a neglect of the basic texts, and a stage was reached where scholars were compiling glosses about the glosses. A move towards simplification and elimination was due, and when it came it was doubly operative, comprising both the mystical and the rational. From the love of God sprang a desire to cast off all the unnecessary trammels which had been imposed by narrow-spirited clerks and threatened to stifle doctrine. The different sects were making use of the *kalam*, quoting verses of the Koran at each other, and arguing *ad infinitum* over the literal, allegorical, and metaphorical meanings of words.

A notable protagonist came forward for the new attitude in the person of Ghazali, a writer of stature, of Persian origin, whose influence was felt in the eleventh century in all the countries of Islam and as far afield as the Atlantic. A mystic named Kushairi, in a famous Epistle, had made an attempt before him to prove that Sufism was not at odds with orthodoxy. He may be said to have taken up a similar position to that of Ash'ari. Moslem attitudes were showing a certain modification, increasingly at variance with the fanatic monotheism of the Koran. Popular fervour in fact was finding its outlets, and there are guides extant from the early twelfth century to pilgrimages made in honour not only of the devout personages of the Golden Legend of Islam, but also of Old Testament patriarchs and Christian saints. It is generally agreed that the Shiites were probably the first to raise commemorative buildings or martyries to the principal saints, both men and women, of the ill-fated house of Ali. They were tangible symbols of the exemplary life or of unjust suffering offered for the veneration of the masses.

The originality of Ghazali lay in his repudiation of all philosophic tendencies, of which he had made an intellectual survey, and the assertion of the religious

emotion as independently valid in its own right. His efforts were directed towards halting the decline into disunity, and towards providing opposition to the rationalist theories which were undermining the spirit of Islam. He had no hesitation in rejecting *in toto* the theories of Farabi and Avicenna, although he considered these men to be Islam's greatest philosophers. He made use of his own experience of the contemplative life of solitude, and launched an attack on scholastic dogmatic subtleties, proceeding from these to a condemnation of the alleged identity of faith and law. He carried the war against the lucubrations of the jurists as far as to refuse classification of their discipline among the religious sciences. He was alive to the danger and the dessicating effect of hair-splitting cavilling, and preached the exercise of piety. In this he was in accord with Sufism, but he differed from it in desiring to encourage the formalism of the cult in so far as this was sanctioned by the tradition, less as a tedious routine than as a salutary discipline. He laid great stress, of course, on the internal state of mind of the believer during prayer, but was far from neglecting the juridical prescriptions.

Ghazali strongly opposed the 'libertine' Batiniya, who renounced God, and advocated the individualistic religion that was so dear to Sufism, but shunned any position which involved being set apart from the community. His was the first real attempt—and a successful one—at reconciling the mystic standpoint with that of the theologians. Between the lack of comprehension on the part of the theologians and the, at times, scabrous attitude of the mystics, a wide wedge had indeed been driven. For Ghazali the bitter dialectic and the petty casuistry of the jurists were alike antipathetic. He seems to have been equally disappointed with both the foolishness whose only basis was authority, and with the proud workings of reason, and he took refuge in the intuitive apprehension of truth. Faith and the religious life must no longer be based on scientific systems, subject to continual fluctuations and dissension. In him Islam indeed found its great doctor. He effected a reversal of rôles, by which the philosophic schools were relegated to the sidelines of religious doctrine, and doctrine itself took on a proud new lease of independence. The office he performed has, with good reason, been compared with that of St Thomas Aquinas for Christianity.

After Ghazali, mysticism was strongly influenced by Ibn A'rabi. The influence he exerted was the more dangerous in that he displayed a complete indifference to all organized religion. Sufism could not accommodate such declarations as: 'Perfect knowledge is to be obtained only directly from God, not through the tradition or the teachers.'

Djalil al-din Rumi is one of the writers who represented the mystic literature at its height. His long poem in Persian, the *Methnevi*, is a collection of edifying tales, anecdotes, and moralities, clothed in personal reflection. The whole work, written with extraordinary verbal richness, constitutes the most comprehensive monument of Sufism, in its combination of esoteric doctrines, probably inspired by Neo-Platonism, and pantheistic tendencies. He

inaugurated the order of the whirling dervishes, which was characterized by the 'vertiginous dance by spinning dervishes in flaring robes', a kind of representation of the turning of the heavenly bodies, and a means to achieving a state of ecstasy.

Since the revival of Sunnism that followed the fall of the Fatimids, governments had been multiplying the number of Sufi convents, rivalling each other in the lavishness of the decoration and furnishing. There may indeed be a certain irony in the comment of the Spanish traveller, Ibn Djubair, on the religious community at Damascus: 'These Sufis are a company of kings in this country, for God spares them all the preoccupations of the world and its vanities, and relieves them of all care for their subsistence, leaving them free to give themselves entirely to their devotions. He houses them in palaces which are a foretaste of those in Paradise.'

The Spanish pilgrim's jibe is evidence of the separation of the western part of the Islamic world to form a section apart from the rest. The Berbers had undergone conversion to Islam without opposition but, equally, without deep feeling. Religion was really of importance to them only in so far as it could be made a cover for vague aspirations to autonomy. Earlier they had been converted with equal ease to Christianity, where they had proceeded through Arianism to Donatism and back again to the fold of Catholic universalism. These facts must not be overlooked in considering the adherence of the Berbers to Islam; their passages of enthusiasm for Kharijite and Shiite ideas, and their final reversion to a rigid orthodoxy.

Through this period of Islamic history, the religious emotion is thus linked indissolubly with Berber nationalism. The autochthonous population accepted the new religion, but rejected their eastern masters, who not only showed their contempt as Arab aristocrats for the Berber tribesmen, but also had the effrontery to demand taxes from them. The Berbers took eagerly to heresy as a means of opposing them, and only under the rule of their own national sovereigns did they revert to orthodoxy, to which they imparted an austere puritan flavour.

The Almoravids were martial monks, vowed to prayer and holy war. With these twin ideals (which, in the end, proved to be identical) they succeeded in welding together both Berber and Andalusian Moslems. Their aim was to antagonize no one, and so they preached the return to the kind of life envisaged by the Prophet, a reversion to the Madinese mode of ritual, and the shunning of Shiism and all heresy. Such an attitude was admirably designed to promote unity in the face of the infidel.

This religious renaissance seemed to be ensconced solidly enough, but it had to reckon with a body of jurists who busied themselves with the traditions almost in a state of frenzy, and blind to all else. These jurists reached a point at which the existence of the Koran was forgotten; by quibbling over the attributes of God, and promoting the cult of the literal characteristic of their endeavours, they ended by embracing anthropomorphism.

Religious grounds too were the basis of an attack by a new preacher, Ibn Tumert. His attack was bitterly and unremittingly pressed, and eventually wore down the position of the Almoravids, which was vulnerable on the score of religion and already precarious politically. Like the first, this movement was national, and the man behind it was hailed as a Berber prophet; his principal lieutenant later became the founder of the dynasty of the Almohads. This name in itself embodies a whole programme. It is a slightly altered form of an Arab word meaning 'those who preach the unity of God'. For this phrase, the Almohads substituted another: 'affirm the unity of God in such a fashion that the other attributes have no existence of their own and are incorporated into the divine essence.' The Almohad movement, influenced by Ghazali, sought to return to the Koran and the Sunna; its members believed themselves called to safeguard the unity of God. Their ultimate aim from the first was the caliphate, which they claimed by virtue of their Berber origins, their religious doctrine, and their political programme. The reform of Mohammed Ibn Tumert was thus at once a dogmatic system and a theocracy, the one as absolute as the other; all who thought differently from him were infidels. Religion had to be re-established on the principle of authority, as distinct from either reason or personal opinion. The idiosyncratic originality of Ibn Tumert cannot be over-emphasized. He preached in Berber, not Arabic, so as to present himself as a national hero, and he declared himself a mahdi and an infallible imam; he took his ideas from Shiism while remaining a Sufi, obsessed by memories of the Prophet, he acted as one who was divinely inspired. He inaugurated 'what constituted the most aggressive expressions of local spirit'. (J. Berque.)

Malekism had made its way into Spain, and there led for a long time an isolated existence, which was peculiarly intransigent and immutable. The atmosphere was not favourable to liberal speculation, and the Spanish Moslem religious tradition was in general restrictive. Mou'tazilism seems to have had some success at the time when the works of Djahiz came into major circulation in intellectual circles in Cordova and other large towns. But this was also the period of the first book-burnings, and Moslems who wished to maintain their right to a personal viewpoint had no choice but to study these works in secret.

It was from a hermitage that Ibn Masarra, a pious ascetic, first propounded his disquieting doctrines. He was exiled, following accusations of heresy, and went first to north Africa, and then to Arabia. On his return, he took up his teaching again. For him 'the existence of a spiritual matter was attested, in which all beings except God participated'. From this starting-point, which was taken from the *Emeads* of Plotinus, Ibn Masarra constructed a cosmology of the universe and a doctrine of free will. His influence was extensive, and his disciples were successful in propagating his theories, in spite of being persecuted by the theologians.

The twelfth century in the West boasts two great names: Ibn Tufail and

Averroes. In contrast with the decline of philosophical studies in the East, such studies came now to a fine flowering in Spain. The philosophic work of Ibn Tufail 'reaches at times the heights of literary art'. His tale, *The Living, The Son of the Wakeful*, develops the idea of 'the incarnation in man of active intelligence, first emotion of the Divinity', and shows how 'knowledge acquired by natural means is found to be in perfect accord with the supernatural revelation of the Koran'.

The period here surveyed culminated with Averroes, the commentator on Aristotle, of whose reputation no reminder is necessary. Here was one who had seen through the Ash'arite theologians. 'The Moslem atomists,' he wrote, 'who deny human powers and, in consequence, practical wisdom, free will, and all the productive forces, maintain these hypotheses not because they have reached them after independent reflection, but because they see in them the means of defending principles they had already committed themselves to in the first place.' He was very sensitive to accusations of irreligion, and took steps to clear himself, producing 'books designed to maintain the brotherhood of the philosophic truth and the religious'. The title of one of his works is indicative of this preoccupation: *The Points of Contact of Canon Law and Rational Wisdom*. Nevertheless, Averroes professed a belief in the eternity of the world and in the existence of secondary causes, and denied the immortality of the soul. All these points set him at variance with established religion.

A word should be said, finally, about Jewish thought, the expression of which was eventually made in Arabic. The centre of Mesopotamian Judaic culture was the Academy of Sura, which had been a flourishing institution since the middle of the third century. In the tenth century there appeared on the scene the greatest Jewish philosopher since Philo, Saadia Gaon, the rector at Sura and the author of the major work entitled *Beliefs and Principles*. Discussion within the Jewish community had been influenced by what was happening in the Moslem world. The repercussions of the Mou'tazilite movement had some effect on the Karaite Jews, who inaugurated Jewish philosophy. Saadia, however, was their great adversary, and, like his contemporary, Ash'ari, he too was to draw the essence of his doctrine from the Mou'tazilites. It was based on divine unity and justice, the tenor of the first work of Jewish philosophy in Arabic. Saadia's strength lay in the fact that he was simultaneously Talmudist, theologian, and philosopher.

At this point Jewish cultural civilization spread from Mesopotamia into Spain, enjoying there a renaissance, the architect of which was the famous Umayyad minister, Hasdai, with his lively encouragement of the study of Mosaic law and the Hebrew language. Later, Islamic influence touched the great Maimonides, who entertained similar hopes of the reconciliation of the law with reason, particularly in respect of Judaism.³

NOTES

1. Professor Jussi Aro points out that there is almost never any question of a historical criticism of the text of the *hadith*; there is only the mechanical criticism of the *isnād* or the chain of the transmitters. A *hadith* is good, if a blameless chain of informants is traced back to a blameless first informant, say A'isha, the widow of the Prophet. If one could show, e.g. that a transmitter had been born later than his supposed informant had died or that they were otherwise unlikely to have met, the *hadith* could be regarded as false.
2. Professor Aro emphasizes that this is true in the sense that it is stated in the Koran IX, 37: 'The *nasl*' (inserting an intercalary month) is an increase of infidelity', but this is, of course, only an ill-considered decree of Mohammed who wanted always to be sure of the sacred months in which fighting is prohibited.
3. Professor R. J. Z. Werblawsky regrets that this survey does not mention at all the important rôle of the Jews in the general Arab culture, nor does it emphasize sufficiently the great impact of Islam and the Arabic language on Jewish thought and various aspects of life. It is worth while to mention at least some outstanding additional names, such as those of Bahya Ibn Paquda, Yehuda Hallevi, Moses and Abraham Ibn Ezra and others.

CHAPTER XI

EUROPE AND BYZANTIUM

I. THE EVOLUTION OF RELIGIOUS SENTIMENT

EMOTIONAL and psychological factors are essential components of culture; only in their context can we study literary and artistic phenomena. Unfortunately, research in psychological history is most painstaking and elusive; documents are usually inadequate, and their interpretation tends to be biased by the fact that scholars are weighed down by their own psychological attitude and that of their age. Hence, in spite of repeated efforts at plumbing its depth, our knowledge of psychological history is still inadequate. Nevertheless, thanks to recent scholarly work, we can discern at least the main traits and the general evolution of religious sentiment. This, both in its personal and collective manifestations, was undoubtedly paramount in the 'Middle Ages', and had the strongest influence on art, literature, and thought; moreover, it can be traced through a considerable body of evidence. The history of popular devotion, and its links with such aspects of religious life as the evolution of liturgy, the foundation of monastic orders, and the emergence of heretical or non-conformist movements, has attracted special attention in recent historical studies, both with reference to western Europe and Byzantium; it will be the main subject of the present chapter.

Christianity from Agony to Triumph. Christianity is alone among the monotheistic religions in attributing to God, in addition to infinite power, a charity so great as to lead him to assume the humble condition of man. The life of the God-Man on earth is a life of neither power nor glory; he lived there as a poor man, among the poor, and he underwent the shameful agony of the Crucifixion. In him is manifest the redeeming power of human suffering. The originality of Christianity lay in its affirmation of the positive, seemingly infinite, value of suffering. Its history was for a time in accordance with this vocation. Christianity first spread through the Roman Empire as a religion of the poor man and the martyr. But with its triumph came a change: from the fourth century, Christianity was the official religion of the Roman Empire; a religion of conquest, imposing itself, or being imposed, on the peoples of Romania and even upon the barbarians outside it.

Disputes in the Eastern Empire. Such tremendous superficial propagation could not be accompanied by an equal penetration of the religious life in depth. And here the difference between the levels of culture prevailing in eastern and western regions of the Empire came prominently into play. The eastern Empire, where Christianity was born and first began to command allegiance,

opened to its propagation an area much more urbanized and culturally much more developed. Here the religious life soon attained an intensity and a capacity to stir the masses, as revealed in the great disputes over dogma. Scarcely had the dispute over Arianism¹ subsided before christological controversies supervened, disputes which were sustained by an interest so popular that countries like Egypt and Syria found in them the ideal ready-made expression of their separatist tendencies and aspirations to autonomy, leading to the secession involved in the acceptance of Arab conquest. The Empire, maimed, internally disturbed, and impoverished by its defeats, was then still in the throes of the great iconoclastic crisis. These vast disputes, the equivalent of which a culturally less-developed West had still to experience, were eventually brought to an end with the return to orthodoxy in 843, commemoration of which event was to remain one of the great official Byzantine festivals.²

'Heresies' in Byzantium. Minor factional conflicts persisted, and disagreements over points of dogma. Some of the non-conformist doctrines were branded as heresies by the 'orthodox' state religion: for example, the doctrines of the Paulicians, advocates of a neo-Manichaeism tinged with Christianity, who had taken refuge in Bulgaria, blossomed into Bogomilism. This was an attempt to reconcile the old Iranian dualism with the Christian dogma of the Redemption. God was considered to have had two sons: Satanael, spirit of evil; and Christ, who by his apparent incarnation triumphed over his brother. The Bogomils rejected all hierarchy and all images, subscribed to no other sacrament than the laying-on of hands, and led a life of asceticism. The success of Bogomilism, which in Bulgaria and Serbia became a truly popular movement, resulted also from the support it afforded to national resistance to Byzantium. In the territory more directly controlled by the Empire, however, both Paulicians and Bogomils were defeated and driven underground. Though it is difficult to detect hidden survivals of old heresies, and (especially in the rural areas) of pagan cults and magics, on surface one would say that after the mid-ninth-century official orthodoxy was sometimes challenged, but never seriously threatened. This stability was paid for, however, in the tendency of the Faith to be seen increasingly as a legacy which had to be preserved and protected from contamination, and less as a live, sustaining reality.³

Byzantine Orthodoxy. Orthodoxy consistently maintained the fundamental dogmas of the Incarnation and Redemption through the sufferings of the God-Man. But piety would seem to have focused attention more particularly on the triumphant aspects of this Redemption; the Cross was seen first and foremost as a symbol of victory. The dead Christ was not represented upon the Cross until the eleventh century, and then only to give point to the rite of Zeōn (this consisted in the pouring into the chalice of some drops of warm water symbolizing the Holy Spirit, which preserved the body of Christ from corruption). Even then, the pathetic was not the aspect most emphasized. And

the favourite representation of God remained that of the Pantocrator, lord of the universe, surrounded by his celestial court. (Pl. 22.) A uniting parallel, as it were, had been very soon established between imperial etiquette and religious liturgy. Like the dwelling of the Basileus himself, the sanctuary was more or less closed to the faithful. In the Mass, it was on Christ's presence, even more than on the sacrifice, that stress was laid, and the *cherubikon* hymn celebrated his entry, flanked by the heavenly hosts.⁴

Relics and Saints. The cult of relics and saints early assumed an important place in Byzantine religious life. A relic was the body of a holy personage, or an object that had been in contact with Christ or with a saint: such contact made it, eternally, a vessel of divine grace. To draw near to it in veneration was, so to speak, to make contact with the supernatural, and to profit by its miraculous powers. The Byzantine Empire was particularly well provided with such relics, the astonishing profusion of which seems never to have given rise to doubts. The churches of Constantinople boasted the True Cross, the Crown of Thorns, the Holy Lance that pierced the side of Christ, his shroud, the towel he used when he washed the feet of the Apostles, the bread he gave to Judas, even his swaddling clothes, all of them enshrined in sumptuous reliquaries!

Equally coveted were the relics of saints, which were often apparently of particular virtue in the healing of this or that disease, or the obtaining of a specific kind of favour. Martyrs were the objects of particular veneration: from the moment of their condemnation, they had been inhabited by God, and endowed with a supernatural force which survived in their remains. Their cult was responsible for the popularity of pilgrimages. The emotional response which the cult evoked among the masses turned the transfers of relics into major affairs of state. Because it stimulated the construction of special buildings, the *martyria*, the cult also had a decisive influence on religious architecture.

Icons. From the sixth century onwards, a part of this popular fervour was transferred from relics to holy images. Early Christianity had been on the whole indifferent to representational expression, and the underground life it led in face of persecution gave good grounds for an almost complete restriction to the symbolic. Since the third century, however, mortuary iconography had celebrated the martyrs of the Faith and their immortality. From the sixth century the texts emphasize the miracles worked by these images of saints, and the cult of 'icons' gains ground with remarkable rapidity.

It was at this period that the veneration of *acheiropoietoi* icons spread. These were icons which were not the work of human hands: such an icon was the cloth on which Christ himself was said to have imprinted the image of his face, declared by a painter to be uncopiable. (Pl. 23.) The most extravagant stories circulated about these icons; the emperors had them carried with them on their military campaigns; and the very extremes to which the fervour was

carried gave rise to the iconoclastic reaction. This movement was eventually crushed, but only after orthodoxy had been induced to distinguish between 'worship' or 'adoration' which are due to God alone, and the relative 'veneration' due to images of Christ, his mother, and of the saints, and to formulate clearly its doctrine in the matter of images. This doctrine received valuable support, as far as the educated classes were concerned, from neo-Platonism. Its main argument, however, as expressed in particular by St John of Damascus, was based on a theology of the Incarnation: because God became man, images of Christ in his visible and human aspect are truly representations of God. The existence of *acheiropoietoi* images, individually enumerated, was also recognized, together with the miraculous powers they exercised. This victory of the champions of the images had significant consequences. The iconostasis, an icon-bearing partition placed before the sanctuary, now came into general use. The production of icons developed rapidly, and the cult continued to command great popular response, particularly in countries of recent conversion such as Russia.

Byzantine Monasticism. The most ardent champions of the images had been the monks; and monasticism continued to play an essential part in the religious life of Byzantium. Three general tendencies were consistently in evidence. The first was the eremitical life, first practised and developed by St Anthony and the other Egyptian anchorites of the fourth century. The second was a form intermediate between the strictly eremitical and the highly organized community system; particularly favoured in Palestine in the fifth and sixth centuries, its characteristic form was the *laura*, which consisted of a group of hermits who lived in separate huts or cells, but under the direction of an abbot and met together on Sundays for the celebration of the Eucharist. The third type was represented by the coenobitic monastery, an organized and centralized community whose members, grouped together within the confines of the same walls, owning no personal property, lived subject to the authority of an abbot. Coenobitic monasticism was first developed in Upper Egypt in the fourth century by St Pachomius, was later organized by St Basil, involving—though St Basil laid down no exact rule—life in common, strict obedience to a superior, manual and intellectual labour, and works of charity.

The fifth and sixth centuries witnessed a rapid proliferation of monastic foundations, and Justinian felt called upon to define the status of the monks, and to place them under the control of the bishops. The iconoclastic crisis afforded the emperors a pretext for limiting the recruiting activity and wealth of the monasteries, the development of which seemed to them to constitute a danger to the state. Many monks were imprisoned, others sought refuge in various places, many of them in particular, at the Bithynian Olympus (in western Asia Minor). Among those educated there was St Theodore, whose reform movement was to be responsible for the monastic renaissance of the ninth century. St Theodore, whom Irene installed in the Studios monastery

at Constantinople, preached a return to the principles of St Basil. He affirmed that the monks, who alone were capable of leading the Christian life in all its purity, should become the perpetual animators of a movement for the purification of morals and the reform of the church.

From the ninth century, monastic foundations again multiplied, and, disregarding Justinian's wise counsels, the emperors left them largely to their independent devices: the result was a great diversity of statutes of foundation, or *typika*, and the rejection of episcopal authority. Monasticism thus acquired very considerable flexibility, enabling it to embrace very diverse forms of religious ideal. Its vigour expressed itself in the formation of what were in fact monastic republics, like that at Mount Athos, or the federation of Cappadocia. The liberty which the monks enjoyed, in their exemption from all ordinary laws, allowed them also to assume a boldness of speech and action that was not without its usefulness in a strongly authoritarian state. But a further result was that, when a monastic decline began in the twelfth century, it was impossible to induce the monasteries to reform. Nonetheless, this should not lead us to ignore the remarkable revival of contemplative monasticism on Mount Athos and in other centres of the Byzantine world in the fourteenth century.

The monks were by no means all clerics, a fact which made it possible for members of the laity to retire to a monastery, and sometimes to continue to exercise certain civil functions from within their retreat. At all events, monasticism was regarded to the end as the highest form of Christian life, and the image, amid a sinful society, of the heavenly life to come.

Roman Christendom. Throughout these centuries, the features of Byzantine piety are as it were reproduced in a lower form in the religious life of Roman Christendom. Christianity here retained for a long time an admixture of pagan survivals which the missionaries had felt obliged to tolerate. The conception of the marvellous which ran through these pagan observances—the worship of springs and trees, and sacred banquets, for example—was a caricature of the Christian idea of the supernatural. Behind the appearances of the physical world and the happenings of daily life, a whole magical universe is to be guessed at, which only verges on the notion of the divine. In this universe God is seen as an associate, whose collusion must at all costs be assured.

It was by reason of his power that this God had carried the day. Was it not the inefficacy of the heathen gods, whose signs and images had been destroyed with impunity, that furnished the Christian missionaries with their best proof? For a long time, Christ himself, as represented in painting and sculpture, was to be Christ the conqueror and judge. What the sculptor of Moissac, for instance, wanted primarily to convey was the terrifying majesty of his countenance, his flashing eyes, his hieratic attitude. A naked crucified Christ, painted in a church at Narbonne in the sixth century, provoked a public outcry. The essential message of Christianity had still to be absorbed.

The Importance of the Liturgy. All the same, a quite peculiar importance was

attached to the liturgy, narrowly understood throughout the early Middle Ages, as being the set of rules by which supplication might be made to God and which must be followed with the utmost exactitude. The sacraments were an essential element in this liturgy. But it also embraced ordeals, tests by means of which human judges interrogated God, which were for a long time accepted by the Church. For centuries, devotion commonly meant the scrupulous performance of the rites, attendance at numerous offices, and participation in the sacraments, which were considered more as duties than as rights and the means of access to a richer inner life. Of such an inner life, some manifestations could indeed be found in the contemporary religious literature, but most probably they remained confined to a very scant minority.

The intellectual level generally was too low for discussions of dogma to be pursued very actively or in any but very limited circles. The basis of the relation of man and religion was almost juridical; it was meant that, from time to time, he should renew his allegiance. As a matter of fact, certain penitential books of the early Middle Ages contain tariffs of penances to atone for every sin, which closely resemble the list of judiciary fines imposed at the same period for every criminal offence, without taking into account the intention and circumstances that may have extenuated or aggravated the transgression.

The Life of the Cloister. The ideal religious life continued to be envisaged as the withdrawal from a world of evil and brutality. Partly for obvious reasons of climate, the attraction of the life of a hermit was never as important in western Europe, except in Italy, as in Egypt or Syria. Withdrawal from the world was by way of entry into a monastery, and the observance of a rule, which in the sixth and the seventh centuries was often the rule of St Columba but more frequently then, and later almost exclusively that of St Benedict. This life of the cloister, organized in reaction against the vagrant life of certain hermits, divided between prayer and intellectual and manual work, was the only really good life which was offered to the mass of the faithful. An Augustine in England, a Boniface in Germany had, for missionary purposes, mingled with the life of their time and played an active part in it. But, at the beginning of the ninth century, the reform of St Benedict of Aniane was directed towards the re-establishment of the rule of complete withdrawal.

The Cult of the Saints. As in the Byzantine Empire, one of the most vigorous manifestations of popular devotion was the cult of the saints. When a man died who had been renowned for his virtues, the public voice proclaimed his sanctity, and surrounded his tomb with veneration. By the ninth and tenth centuries, the cult reached the stage of fanaticism. 'Discoveries' and transfers of relics, and pilgrimages to the shrines where they were preserved, multiplied. Certain monks even went to the length of stealing relics that conferred glory on a rival monastery. There are sixty or more tenth-century *Lives* recounting the deeds of these saints. Characteristically, some thirty of these books are about bishops, fifteen or so about monks, a few about princes, but few of them

concern priests or deacons, and virtually none the ordinary laity. To the people themselves it seemed impossible to find sanctity within the ordinary conditions of life. Among the 'orders' into which Divine Providence had seen fit to divide human society, the superiority of certain groups was thus clearly recognized. The inferiority of the priest, his functions restricted to the liturgical, is clear.

Popular Piety. All this indicates some of the basic features of this popular piety: a love of the marvellous, and confidence in the magical powers of the intercession of the saints. It was an exaltation of sanctity which envisaged the Christian life as an effort on a tremendous scale, the end result of which would be, not the endowing of the ordinary actions of everyday life with significance, but the acme of mortification in the truly terrifying war on sin. It was a call to a heroic style of life, in part explained by the harsh conditions of the time. This piety may seem crude indeed to us, but it was nevertheless deep-rooted and imbued with life. Evidence of its strength, surprising even the contemporary leaders in the Church, was given in a series of religious movements that followed one upon another from the end of the tenth century.

The Peace of God. The first popular movements arose from the efforts made by the Church to establish the 'Peace of God', which should ensure protection for the churches and for the 'poor'. Many of the laity attended the assemblies where, amid an atmosphere of general fervour and enthusiasm, oaths to keep the peace were sworn on relics, oaths which were very often subsequently broken. From the laity also were recruited the troops of the leagues of peace, which were launched by the bishops against the strongholds of the oath-breakers; although they themselves were not infrequently guilty of excess. All this was evidence, qualifying clauses notwithstanding, of the response evoked in the masses by the idea of peace which the Church was promulgating.

New 'Heresies'. About the same time, 'heretical' movements of a new type arose which were no longer speculative, and no longer confined to the clergy, but originated primarily in an attitude of moral rigorousness, and numbering their adherents alike among the peasants from the countryside and the artisans and burgesses of the resurgent towns. Little groups came together in various places—such as in Aquitania, in Orleans, at Arras, and near Asti. Their doctrines, doubtless considerably systematized in the documents to which we owe our acquaintance with them, often include a more or less confused form of dualism, their main emphasis being on the corruption of the clergy.

The 'Terrors of the Millennium'. Little space will be devoted here to the 'terrors of the Millennium', the reality of which is a matter of controversy. Whatever may have been the speculation behind an idea of the end of the world one thousand years after the birth (or the Passion?) of Christ, they were of a character primarily to engage the interest of scholars. The ideas of the masses in regard to chronology were vague in the extreme. The suggestion that there

was any widely or simultaneously held belief that the end of the world was to come about at a specific date must be ruled out. The most that can be said is that waves of fear swept over areas of greater or less extent at various times. By way of comparison, in the Byzantine territories—and in the Slav too, according to the *Le Dit d'Igor*—the end of the world was often linked, not to the first millennium after Christ, but to the sixth millennium from the Creation.

The Pilgrimages. It was also in the eleventh century that pilgrimages became popular. These pious journeys began very early and were undertaken by the faithful who travelled to a sacred place in the hope of obtaining fulfilment of some wish—such as a cure—but, at the same time, as a form of penitence, a means of achieving self-purification through the trials encountered on the way, along with deeper piety through prayer and meditation. As early as the fourth century, pilgrims came from far afield to worship at the tomb of Christ and to commune in the places where he had passed his life and his Passion. (Pl. 24.) In the eleventh century, the pilgrimage to the Holy Places developed still further and pilgrims gathered in groups. Ever-larger bodies of pilgrims also visited what was believed to be the tomb of St James of Compostela in the north-west of the Iberian Peninsula, the tombs of the Apostles Peter and Paul in Rome, and likewise a whole range of other places such as Tours (St Martin), Saint-Gilles, Gargano (St Michael). This development of pilgrimages is one of the signs of men's increasing mobility.

Investiture Crisis. Against such a background the great reform movements of the eleventh century were conceived and put into effect. The first impulsion towards a purification of the behaviour of the clergy did not come from the clergy or the papacy itself, which would have to cut into their own flesh, but chiefly from pious princes and other laymen. Even later, the struggle against simony and the marriage of priests, culminating in what has come to be known as the Gregorian reform, received active popular support in some places—in Milan for instance, where the 'Patarins' (a name given to these popular partisans of the Reform, from a word which probably meant 'ragged') tracked down married priests and brought about disturbances that caused disquiet to the Papacy itself. When Gregory VII prohibited attendance at masses celebrated by simoniac or married priests, this gave rise to the idea that sacraments administered by them were invalid. In more than one place in Germany, fear seized the faithful who were served by such priests, and parents took to baptizing their own children. In any case, the populace everywhere was showing that it had awakened to a new critical attitude towards the clergy.

The Crusades. The Crusade called forth equally strong popular response. Some scholars maintain that the idea of the holy war was linked to that of the peace: the Church was seen as a closed society, whose duty it was to establish peace among its members, but also to defend itself against enemies from outside.

Urban II, when he preached the Crusade in 1095, probably also had in mind the hope of deflecting to the Mediterranean East the forces of internal disorder. However, his call, relayed by the popular preachers, set more than knights on the road. The response it met with was much more general, and was linked with the collective pilgrimages to Jerusalem. Crowds of poor folk, sorely tried by plague and famine, loaded their children and their belongings into carts, and set out, apparently with no idea of ever returning. Such disorganized bands, pillaging and killing as they went, were gradually broken up; any survivors who did reach Asia Minor were quickly wiped out by the Turks. But it seems that elements of them attached themselves to the main knightly force of the Crusade. Through all the rigours of the journey, and through the sieges of Antioch and Jerusalem, this throng of Crusaders would appear to have been sustained by visions and prophecies. In its origins, then, the Crusade was both a popular movement and a clerical and knightly one. Increasingly, the two elements were to go their separate ways. What the Crusades gained thereby in organization and in the restriction of the fighting force to effective combatants, they lost in fervour and depth of feeling. The Second and Third Crusades were still accompanied by popular preachings. From the thirteenth century, shepherds and children would set out in their own independent crusading armies, to perish miserably in the popular reaction raised against the excesses they committed.

The Gregorian Reform and Popular Aspirations. Protest against the corruption of the clergy was to have still more far-reaching effects. In the first quarter of the twelfth century, the Gregorian reform achieved its political ends at the price of compromise. Henceforth, provided a priest had been ordained or a bishop consecrated canonically, the validity of offices performed by them was not to be questioned. Such, at least, was the official attitude: popular misgivings were not always so easily allayed. What was now activating the popular mind was an aspiration, more or less vague, to the 'apostolic life'. Going beyond the exclusively liturgical and juridical concept of religion, an increasing number of the faithful felt themselves called to initiate the example of Christ himself and of his disciples.

The controversy was over the meaning to be attached to the term 'apostolic life': the answers given were various. There was the traditional ideal of the 'communal life', entailing the renunciation of all private property, as in the primitive Church: it was the ideal expressed in the monastic life. In the eleventh century, numerous chapters—i.e. bodies of priests deserving a cathedral or collegial church—were reformed according to the same ideal, adapted to the necessities of parochial life. But there was also a tentative groping after a way of life still more purely evangelical. The search was pursued, throughout the twelfth century, by the founders of Orders and heretical sects, in a dialectical movement for which the thirteenth century was to provide a synthesis.

New Orders. The proliferation of new monastic Orders connected with the reform movement began at Cluny, Grottaferrata, and certain centres of Lorraine in the tenth century, but it gained speed by the late eleventh century. The later affiliation of a number of these to the Cistercian movement has resulted in a neglect of a study of them in favour of the Cistercians. In fact, such proliferation is itself evidence of dissatisfaction and quest. During the last quarter of the eleventh century, a movement centring on the abbey of Hirsau (Wurtemberg) led many people, nobles and peasants alike, of both sexes to form groups to live a communal and ascetic life outside the cloister. A little later, Robert d'Arbrissel, whose first choice had been the life of the hermit, began travelling the countryside, preaching penitence and poverty. The considerable number, of women particularly, who rallied to him, he eventually gathered together in the monastery of Fontevrault by the Loire (1101). Many other movements developed in somewhat similar fashion; they began from an urge to seek the hermit's seclusion, and progressed through expression by a travelling preacher, to organization as a community. At a later stage, however, they also adopted a traditional rule, Benedictine or Augustinian, and so brought themselves within the ecclesiastical framework. St Bernard himself declared that he was only reverting to the true spirit of St Benedict, seeking a purer realization than at Cluny of the ideal of poverty. He forbade monasteries to receive revenue, or to adorn their buildings; the monks were installed in places of the utmost isolation, and forbidden to leave the cloister. The success of the Cistercian movement proved that this was an ideal answering to a need of the time. But, in a period of urban growth and social change, that need was not the only one, as was made increasingly evident in the course of the twelfth century, during which the first flush of Cistercian fervour was for its part already on the wane.

The Waldensians. This evidence lies in the multiplying and rapid spread of the heretical movements, centring around a wandering preacher, often a former monk or priest. Each must not, of course, be denied its own point of doctrinal origin, but they shared certain common characteristics: a sort of lay evangelism, an effort to 'live like the apostles', and the conviction, reinforced by denunciation of ecclesiastical corruption, that Christ's words: 'Go ye into all the world and preach the gospel to every creature' (Mark: 16, 15.) were addressed to every Christian. From about 1173, a citizen of Lyons, Peter Waldo, and his disciples, the 'Poor Men' of Lyons and Lombardy, led a life of abnegation amid the world and refused to take the sacraments from 'bad priests', declaring that the qualification for the apostolate was virtue, not the mere holding of ecclesiastical office. Actually, what precipitated the secession of the 'Poor Men' was the fact that the Pope refused Waldo permission to preach in the vernacular language without the authorization of the bishops (1179). Rejection drove the Waldensians farther astray; but as early as 1201, Innocent III brought back to the fold a great part of the Lombard *Humiliati*

by allowing them to preach in public every Sunday without interference from the bishop, on condition that they did not discuss articles of faith.

The 'Cathars'. Among these movements, a peculiar character is presented by one known as the 'Cathars' (i.e. 'the pure ones'). By its doctrinal tenets, it was less a heresy than a kind of Manichaean religion, with its roots possibly in the Bulgarian Bogomilism. It saw the material world as the creation of an evil Being, seldom regarded as the equal, more commonly as the inferior, of God, whence arose a pessimism conduced to asceticism, and a turning away from marriage and reproduction. Belief in the final victory of Good, however, allowed the 'Cathars' to tolerate the existence, alongside the 'Perfecti', of the 'Believers', who simply protected them and could ask of them, at the moment of death, the purifying *consolamentum*. The movement commanded astonishingly widespread allegiance. It was associated with no known founder, but constituted itself into what was in fact an independent church, with its own hierarchy, and ramifications all over northern Italy and the Languedoc. It seems, however, that the emphasis was at first on moral teaching, and it was the life of preaching and wandering poverty of the 'Perfecti' that was primarily responsible for its success. In this respect it can be recognized as a truly Christian heresy, which gradually received formulation, varying in extent from region to region, in a doctrine placing it outside the Christian corpus.

The very success of the 'Cathars', however, pointed the increasing urgency of the need with which the Church was faced from the beginning of the twelfth century, not only of suppressing ever more radical and dangerous heresies, but of finding means of expression within the Church for the new aspirations they represented.

The Mendicant Orders. It was to meet such needs that, in the thirteenth century, the Mendicant Orders were founded. It is noteworthy that the Friars Minor and Friars Preachers, with such very different histories, found themselves eventually engaged in parallel activities. St Dominic grasped the fact that in order to supplant the Catharan Perfecti in popular esteem it was necessary to emulate them: the Friars Preachers were not to shut themselves away in monasteries, but to go out to preach to the urban masses and live by charity. St Francis confined himself to a gradual fulfilment of his own vocation as the humble servant of Lady Poverty, remaining profoundly 'of the people', recapturing in communion with nature the child's capacity for wonder, and suffering with Christ so intensely as to receive the stigmata. His contribution was a new vision of the world. Friars Preachers and Friars Minor both had attached to them Third Orders, no longer communities living a life of seclusion, but associations of lay Christians, deeply conscious of the significance of their religion, and endeavouring to make it an ever more integral part of their daily life in society.

Conclusion. Such, from the early Middle Ages to the thirteenth century, was the development of Western Christianity. At first superficial, almost entirely

ritualistic, it gradually assimilated on levels of increasing depth, and finally became for the great mass of the people a true source of moral and spiritual life. The admixture of crudities, ignorance, and superstition which it retained in no way detracts from that fact.

Christ. The person of Christ immediately took on a new importance and a new character. The first step was taken by St Bernard: for him, meditation on Christ, and on the episodes of his earthly life offered as example, was the path to meditation on God. His sermons, translated into the vernacular, had already found a wide audience: 'Shun pleasure, do penance, that is for you the call of the stable, the sermon of the manger, the unmistakable message of the Babe's tiny limbs, the lesson of His tears and crying.'

St Francis also, in still more popular, visual fashion, meditated on the life of Christ, and from him derived the devotion to the Crib and the Stations of the Cross. Poverty and suffering as assumed by Christ—it was the Christian's duty to seek or welcome them. There was nothing here of the 'social programme', but the exaltation of poverty was certainly not without its influence on the development of western European societies.

The Cult of the Virgin. With this 'humanization' of Christ went the emergence of new features in the cult of the Virgin. Mary was no longer the majestic Mother of God. St Bernard did homage to her as 'the mother of mercy', having an all-prevailing right of intercession with her son. Among the Franciscans she appeared also as a woman, smiling, playing with the Child: the Mysteries of her earthly life took on thereby a heightened quality of tragedy. To this position of the Virgin in the Christian religion must be attributed the greater status accorded to women in Western societies—quite unknown either in pagan antiquity or in the world of Islam, and witnessed to by so many admirable saintly figures, from St Genevieve to St Clara.⁵

Crusade Gives Way to Mission. Lastly, in so far as it demanded that the individual Christian should render in his own person, by his imitation of Christ and his devotion to the Cross, the heroic service which had for some time been epitomized by the Crusade, the new piety had serious effects on the spirit of the Crusade itself. There was, so to speak, a turning inward of the Christian heroic motive. But in a sense, the Crusade gave place to the Mission (a task, it must be recalled, which St Augustine had already carried on in England, and St Boniface in Germany, many centuries before, but probably in a rather different spirit). And the spirit of apostleship, the integration of which into the Church had been achieved by the Mendicant Orders, now found expression also through them in the development of missions in the pagan territory in north Africa and Asia.

It is easily demonstrable how woefully the realization in the thirteenth century fell short of this Christian ideal. It would have been surprising, indeed, if things had been otherwise. But, alike in art, literature and thought,

the evolution sketched above left a profound imprint. Moreover, to the missionary universalism then affirmed may be traced an origin of that European expansion which from the fifteenth to the twentieth century was to control the destiny of the world.

2. THEOLOGY AND PHILOSOPHY

The fifth century witnessed the close in the Christian world of the period known as the 'Patristic'. In the course of this period, venerable bishops and doctors had given a rational formulation to the doctrine of the Revelation, not infrequently paying with their lives for so doing, and had founded the Christian tradition. Now opened a new phase in the history of thought, the culmination of which may be regarded as the achievement, in the latter half of the thirteenth century, of the Thomist synthesis. And it may be considered that the unifying thread is the effort to evolve a 'Christian philosophy'.

Christian Philosophy. Christian philosophy is an expression which has been so much debated that even the basic assumption on which it rests has often been queried, and from many angles. What could be called a Christian philosophy? It is not enough to say that the thinkers of this period were, almost without exception, professedly Christian, and that the systems they evolved were assessed by the Church according to the degree to which they could be reconciled with the body of revealed religion—whence came the concept of heresy, unknown to pagan antiquity. Nor is it sufficient even to treat this philosophy as 'ordered' in relation to the content of religion, an idea which at once evokes formulas current in the period itself, such as 'philosophy is the handmaid of theology'⁶ the too literal interpretation of which would be misleading. A philosophy which confined itself to the assertion of its accordance with the Christian religion while remaining perfectly distinct from it, would not be a Christian philosophy. Equally, a system of thought which confined itself to operation on the religious plane and by processes not purely rational, would not be a philosophy.

A Historical Problem. The problem is really a historical one. Was not philosophy, in fact, influenced by Christianity? Was not Christianity responsible for the introduction of concepts which had been unknown to the thinkers of Greece, and upon which thought, operating according to the methods of these thinkers and from the starting-point of their results, now proceeded to the construction of a rational system which in some respects, went beyond those results? If we look at matters purely from the historical point of view, it would seem that such was indeed the case. What is here attempted is a presentation of the difficulties encountered by Christian thinkers in their renewal of contact with Greek philosophy, and in the assimilation and considered evaluation of that philosophy. It is also an attempt to determine by what process Christian

philosophy evolved gradually to autonomy and coherence, a result which was also an advance on the road from ancient thought to modern philosophy.

A. Outline of the Historical Development

The legacy of the patristic period to the Middle Ages was the formulation of the problems to which its attention was to be directed, and certain of the tendencies which were to dominate it for several centuries.

The Fathers and Greek Philosophy. Among the Fathers of the Church, some, like Origen, Christian by birth, undertook rather late the study of philosophy. But a number had, prior to their conversion, received a philosophic training. Habits thereby contracted led them to reflect upon the doctrines to which they had declared their allegiance, and upon the philosophic conceptions implicit in them. It seemed to them that Greek thought was not by any means in all respects at variance with these doctrines, and that certain similarities could in fact be discerned. This posed the problem: how had these Greek philosophers, unaided by Revelation, been enabled to arrive at conclusions which the latter would seem to have confirmed? Some Fathers went so far as to assert that Plato had known the books of Moses and of some of the Prophets. 'All truth that has been uttered is ours', declared St Justinus, who did not hesitate to claim Socrates and the Stoics as, in a sense, disciples of Christ. Finally, motives of apologetic led the Fathers to state decisively that heathens would find in Christianity certain of their philosophers' ideas, but rectified, enriched, and made fruitful by a grace by which it was given to man to bring his life into conformity with the laws deriving from them. Thus the essential problems of philosophy were formulated in the light of the Faith. These were the problems of God, the problem of Nature and its relation to God, and the problem of man and his freedom: the fundamentals, in fact, of medieval thought.

Superiority of the Greek Fathers. In the philosophical perspective, what stands out at once, of course, is the priority in time and—St Augustine apart—the superiority of the Greek Fathers, due to the advantages of their more cultured environment and uninterrupted contact with Hellenic thought. Unfortunately, our acquaintance with Byzantine philosophy is limited: too many of the manuscripts are as yet unedited for any account of it to be given with assurance. As far as can be judged from evidence at present available, its historical development is indicative of a much more constant degree of familiarity with the great traditions of ancient philosophy, but perhaps less detachment and a less assured grasp when it came to a total re-thinking in the Christian perspective.

Byzantium: the Beginnings. The early stages of the development of a Christian philosophy in the Byzantine world were fairly difficult. There was on the one hand the persistence into the sixth century of a pagan neo-Platonism, centred,

more especially in the time of Proclus (410–85), in Athens, and endeavouring to turn itself into a religion. On the other hand, Christian thought was at the time still almost exclusively a theology, confining itself to the use, in analysis and exposition of the Revealed Truth, of Platonic and Aristotelian methods, which were at that time the tools of all intellectual endeavour of whatever kind.

Foundations of a Scholasticism. Already in evidence, however, were two tendencies which were to dominate Byzantine philosophy, and later to influence profoundly Christianity in western Europe. Orthodox scholasticism was beginning to take shape, in an attempt to harmonize, without sacrificing one to the other, an Aristotelianism enriched with contributions from Plato, and the dogma of the orthodox Church. In the sixth century, John Philoponus, a man of pagan Alexandrian education and subsequent Christian conversion, an original philosopher and scholar, was responsible for a peripatetic commentary on Genesis and the eternity of the world, and, through too strict an application of the views of Aristotle on the relations of species and individual to the doctrine of the Trinity, found himself treading the path of the tritheistic heresy. Leontius of Byzantium, who was approximately his contemporary, but much more orthodox, made extensive use of Aristotle's *Logic*. This work led up to the notable synthesis effected by John of Damascus (end of the eighth century). His *Fountain of Knowledge* is the work first and foremost of a theologian, in which Aristotle was drawn on for the elaboration of precise definitions of Being, Substance and so on, and in which the exposition of the heresies and of the orthodox faith itself left no place for an autonomous philosophy. The foundations of a scholasticism had been laid, but as yet there were hardly more than foundations.

Neo-Platonism. On the other hand, Christian mysticism derived a considerable measure of support from neo-Platonism, through an anonymous philosopher who lived about 400—anonymous, except that he claimed to be Dionysus, the only Areopagite to be converted by St Paul. The falsity of his claim was fairly soon exposed, at least in the Byzantine East, but the essentials of his work penetrated none the less into Christian thinking, particularly through the intermediary of Maximus the Confessor (580–662). Conscious of the absolute incapacity of the human intelligence to envisage God by the efforts of its own reasoning, the pseudo-Dionysus restricted his rôle to the denying to God of all those attributes which man might be tempted to ascribe to him. Only a revelation granted by God himself might launch man towards that supreme ecstasy wherein he might be able to rejoice in the contemplation of the Ineffable. This ‘mystic theology’ adumbrated a hierarchy of beings through which this revelation might descend to man: it was able to see in the world a ‘theophany’, an assembly of symbols in which God made manifest the intelligible essences in which his Word was rich. This Byzantine mysticism derived from other intellectual sources, however, besides the pseudo-Dionysus. In the *Ladder of Paradise*, for instance, St John Climacus (about

525–605) made the much more practical contribution of a kind of progressive death to the world and an approach to the state of perfect detachment.

Photius. The Aristotelian current developed in decisive fashion in the ninth century. With the advent of Photius, philosophy was no longer applied exclusively to the expositions of dogma, but extended to other fields. Photius had a disinterested love of logic and dialectics, to the teaching of which he devoted several very detailed works. After him, it may be said that Byzantine thought is dominated by Aristotle, at least in so far as his logic and physics were considered the basis of all knowledge. In the latter part of the eleventh century Eustratios of Nicaea made use of the syllogistic form to imbue neo-Platonic philosophic thought with Christianity, a number of his views being re-expressed only a few years later by Abelard in Paris. As late as the thirteenth century, working against the background of a troubled Empire, Nicephorus Blemmides, a teacher of philosophy at Nicaea who later became a monk, was attacking the problem of universals in an attempt to resolve it along moderate lines.

Psellos. But the most striking feature of the development of philosophy in Byzantium is the growth of the influence of Platonism. Constantly felt since the third century, it takes a clear and brilliant shape in the eleventh with Psellos. Psellos was so convinced an admirer of Plato that, although he wanted to conserve everything of value from Aristotelian logic, he carried to extremes the tendencies which had been observed in certain of the Fathers; in effect, he elevated Plato to the position of a philosopher gifted with special inspiration—a sort of forerunner of Christianity. That Plato should be held in such esteem is readily understandable. The existence of a demiurge whose laws order the universe; of a suprasensory and divine world, of which the physical world is but the image; of an immortal spiritual soul, in bondage to the body which it should dominate, attaining to truth by the mercy of divine enlightenment—these were some of the Platonic themes which found echoes in Christianity. Psellos inserted into his system most of the neo-Platonic philosophers, and in particular Proclus, and yet also contrived to rule out such of their ideas as seemed to run counter to Christian dogma. His pupil, John the Italian, placed no such limits to his advocacy: his condemnation for heresy at the end of a lengthy trial (1077–82) is evidence that for him the neo-Platonic philosophy was a self-coherent body of truth, within which it was not for Christian dogma to dictate its choice. Such was the beginning of the Platonist movement which was to find its most distinguished advocates in the fifteenth century, and to survive through the Italian Renaissance of the fifteenth and sixteenth centuries.

Latin West: Saint Augustine and Boëthius. Until the time of St Augustine, the Latin Fathers had directed their attention primarily to questions of apologetic and morality. Their acquaintance with Greek philosophic systems, or the works of the Greek Fathers, was small. With the preaching of St Augustine,

who together with Christianity absorbed Platonic ideas, the Platonic influence began to be felt in the West. But it was the influence of Platonic ideas which were known only imperfectly, principally through the intermediary of Plotinus and Proclus. This was the Christian neo-Platonism which in the early Middle Ages would have remained unchallenged, had it not been for the corrective and supplementary action of Boëthius. He laid stress on the dignity of philosophy, seeing in it a love of wisdom that was for him a form of the search for God. The essential element of his achievement was the transmission by translation and commentary of the Aristotelian works of logic, hence the title, often conferred upon him, of 'Professor of Logic to the Middle Ages'. It was also he who confronted succeeding generations with the problem of universals, long, though mistakenly, regarded as constituting the central problem of medieval philosophy. Briefly stated, the problem is this: when we speak of men, animals, and so on, what is the reality—the individual entities whose images are mentally grouped under these headings (nominalism), or the general ideas which the headings express, the concrete individual entities of which are only imperfect images (realism)? Boëthius's resolution of the problem was Aristotelian: the universals 'exist in relation to the physical entities, but are apprehended separately from them'; but he did not proceed to the concept of agent intellect which furnishes the real base of the Aristotelian position. What the Middle Ages knew of Aristotle was derived, until the twelfth century, from Boëthius.

Scotus Erigena. Johannes Scotus Erigena brought into Western thought the ideas of the pseudo-Dionysus, albeit enveloped in an aura of prestige of an alias which had not yet been exposed. Erigena was his translator and in the *Division of Nature* provided a concise exposition of his message. The approach adopted in this is the dialectical, which seemed to Erigena to be in accordance with the laws of being. Starting from the supreme unity, he descends to individuals, fallen through Original Sin, and traces their re-ascent towards that unity, made possible by the new Revelation in Christ, and by the Grace of which his Passion is the source. If the whole universe is in process of ascending to God, what becomes of the idea of a material hell? This was one of the difficulties into which Erigena's system led him, and which furnished the grounds for his condemnation. But it would be wrong to call him an early rationalist: reason was for him no more than a divine illumination complementing faith. The degree of influence exerted by Erigena on doctrine was not immediately apparent; but medieval symbolism, in which the universe is seen as an assemblage of signs emanating from the divinity, may be regarded as stemming from him.

Philosophy and Heresies. The thought of Erigena was an isolated ray of light. Until the eleventh century, material conditions were not conducive to philosophical thought. Even then what is mainly in evidence is a new eagerness to make use of the dialectic known through Boëthius. This was an activity which

produced quite a crop of heresies. Bérenger of Tours (died 1088), for instance, deduced from it arguments against the real presence of Christ in the Eucharist; and Roscelin (c. 1120) took a nominalist stand over the matter of universals that led him to call in question the doctrine of the Trinity. The great Italian ascetic, St Peter Damiani (1007–72), did not await the emergence of such ideas before instigating a movement against the revival of philosophy, in his eyes the work only of the devil.

Anselm. The eleventh century, however, also witnessed the work of St Anselm (1033–1109), the Italian who first became abbot of Bec, in Normandy, before being made archbishop of Canterbury. His achievement lay in postulating a line of demarcation between the fields of reason and faith, which he did in a celebrated pronouncement that reads as an almost complete anticipation of the solutions of the thirteenth century. The fame of St Anselm rests primarily on his elaboration, in various forms, of the ontological proof of the existence of God, which is based on the impossibility of closing a series otherwise than by a single term, when the series is a sequence comprising a finite number of terms; thus the existence of good, and of the individual entity, postulates the existence of a supreme Good and a supreme Entity from which they derive. The very fact that our minds entertain the notion of God logically entails the reality of God's existence.

Energies in the twelfth century were directed more towards the fuller development of elements already to be found in the Western tradition than to the integration of new ones. The newly arisen fervour of intellectual activity in the urban schools, the widening of the circles of élite culture, and the general heightening of intellectual standards were of prime importance. Latin Western thinking moved to that point of maturity and vigour at which the impact of Aristotelianism on it could be productive.

Abelard. The product of the eventual interweaving of the diverse strands of neo-Platonism that had run through the early Middle Ages—the Augustinian neo-Platonism perpetuated by St Anselm; the mystical neo-Platonism of the pseudo-Dionysus and Erigena; and Platonism as tempered by Boëthius with Aristotelian logic—was the school of Chartres. The tendency of the professors of this school, Bernard and Thierry of Chartres, and Gilbert de la Porrée, was to encourage the scientific branches of the liberal arts, the *quadrivium*. In Paris, however, where Abelard was working, the focus of the teaching was Aristotle, the master of logic (the only aspect under which Aristotle was known to the early Middle Ages). And although the application of the dialectical method to theology in the *Sic et Non* may have been responsible for the craze which impelled students to flock to Abelard's lectures, the solution he propounded of the problem of universals is also the expression of the new vigour of logical analysis as applied to philosophy. Universality is presented here as the logical function of certain words, and an analysis of the foundation on which this function rests is attempted. Increased attention is in consequence

directed to the study of the capacity of the human mind for abstraction, but as yet on a purely psychological level, and still at a considerable remove from the Aristotelian theory of knowledge. Abelard's work does, however, give evidence of the beginnings of a separation of the elements of explication which were taken from Aristotle from those which were taken from Plato. Perhaps most important, he was the first thinker to come forward capable of the exhaustive discussion of a philosophic problem without reference to theology. None of these facts, however, nor the attacks of which he was the object, would justify us in envisaging Abelard as some kind of precursor of 'free thinking'. He himself stated his position unequivocally: 'I wish to be neither a philosopher if this means contradicting St Paul, nor an Aristotle if to be one I must cut myself off from Christ, for in no other name under heaven may I be saved.'

Religious Humanism. No one was more fiercely hostile to Abelard than St Bernard. But what a long way we have travelled from St Peter Damiani, in whose anti-philosophic tradition St Bernard stood! The latter's message to the monks is a reminder that their calling is not to study but to lamentation and prayer. He was himself, however, the product of an extensive education, and his exposition of the doctrine of mystic love, which he evolved on the basis of his own experience of ecstacy, is masterly in its expressiveness and stylistic grace. His contemporaries, Hugh and Richard, moving spirits of the monastery of Saint-Victor in Paris, achieved excellent combinations of philosophy and mysticism. The achievement of such a balanced combination signified maturity; and maturity was implicit also in the religious humanism, in the name of which so many twelfth-century thinkers (pre-eminent among them, John of Salisbury who had been educated at Chartres) could appreciate pagan antiquity, its literary achievements, and the pinnacles of its thought. It is an intellectual progress which the rising tide of popular heresies⁷ in no way calls in question.

All this is evidence of the attainment of a certain level in Western intellectual development. The time was now ripe for the assimilation of the richer, more varied antiquity which was beginning to be revealed in translations from Arabic. And the synthetic spirit, which was later to produce the *Summae*, is already making its appearance in certain works by Hugh of Saint-Victor and Peter the Lombard.

Aristotle. The assimilation and eventual transcending of the whole body of Greek philosophy as transmitted by the Arabs was the work of the thirteenth century. Before 1200, most of Aristotle's treatises were known in the West, but only as part of a confused mass which included apocryphal writings and Arab and Jewish commentaries, from which the true Aristotle was only gradually disinterred. The effect produced was dazzling, a sort of mental perturbation, with which we must associate the heretical doctrines which found support in Paris in the early years of the century.

Signs of uneasiness multiplied. A provincial Council concerned in Paris in 1210 condemned the heretics, and forbade the teaching of Aristotelian 'natural philosophy'. The statutes granted by the Papal legate to the University of Paris in 1215 reaffirmed this interdict. But it remained a localized ban. Commentaries on Aristotle's scientific writings were produced in Oxford, and the young university of Toulouse made telling propaganda use of the fact that it studied the 'natural books' which were banned in Paris. Even in Paris itself the resistance of the theological faculty gradually weakened. Roger Bacon, a young Englishman from Oxford, taking advantage of the uncertain conditions in Paris following the death of Gregory IX (1241), was able to give lectures there on Aristotle. Then, around 1250, in spite of numerous opposition (even among the Dominicans themselves), Aristotelianism began to take the lead. In 1255, the Faculty of Arts included in its programme all the known works of the philosopher. The teaching of St Thomas Aquinas in the Faculty of Theology (1256–9) set the seal of final assurance on this victory.

Origin of the Trouble. That the ideas of Aristotle met with such stubborn resistance was due to more than simply the Arab and Jewish guises under which they reached Western Europe. There were a number of points at which they were either directly at variance with Christian doctrine, or were productive of serious difficulties with regard to it. Aristotle professed belief in an eternal God, who was pure action; but his beliefs also embraced Original Matter, likewise eternal, which was pure power, in relation to which God figured only as the prime mover. The events of the world were determined for him by the motions of the stars, and man's belief, amid this determinism, in his own free will, is an illusion. The motions of the stars being periodic, the life of the universe was periodic also; events, men, and men's opinions 'recurring in regular sequence, identically . . . to infinity'. Like all beings, man consisted of matter (the body) and form (the intellect); and from the union of these two the separateness of the individual derived. When, at death, the intellect was sundered from the body, it relinquished its personal existence to revert to an impersonal mind. These ideas were at variance with such fundamental doctrines of Christianity as the free creation of the world of God, man's free will, the unique character of the Passion, and the personal immortality of the composite human individual.

Nor was this all. An important item in the attraction which the Aristotelian account of the universe held was the harmonious whole it constituted, its quality of comprehensiveness: but it was just this quality which made any other explanation seem superfluous. In particular, it was difficult to integrate Revelation into this complete system. Moreover, Christian thinkers, raised in the Augustinian doctrine of divine illumination, felt a natural hostility towards ideas which reduced the source of all spiritual knowledge to the sensory perceptions, thus cutting the philosophic ground from under the sense of union with God.

Albertus Magnus. Philosophic thought in the thirteenth century took on the amplitude of the systems in relation to which it had to define its position. To use the word 'system' would, however, be premature in speaking of the work of Albertus Magnus. To this German (c. 1206–80), who had followed his studies in Italy by becoming a Friar Preacher, a teacher in Paris, and then organizer of the *Studium Generale* of his order at Cologne, it was given to be the first to grasp how much Christian theologians stood to gain from Graeco-Arab philosophy and science. To him also goes the equally important credit for the assimilation and interpretation of the vast content of that philosophy—a task which he accomplished by truly astonishing devotion and powers of application. Aristotelian thought was for the first time not only reconstructed, but understood from within, and its ideas in certain respects complemented in an original manner. The exact nature of Albertus' thinking is none the less hard to ascertain: apart from his *Commentaries*, which follow in headings and arrangement the Aristotelian treatises, his work consists of *Summae*, which are primarily theological. He seems to have accepted a large measure of neo-Platonic thinking, and assumed that to effect Platonic-Aristotelian harmony would be philosophy's summit and culmination. A real disciple of Albertus may be seen in the German Dominican, Dietrich of Freiberg (c. 1250 to after 1310). Dietrich developed Albertus' work mainly in its scientific and neo-Platonic aspects, and was responsible for the emergence from it of a whole movement which was to culminate, in Germany, in the mysticism of Meister Eckhart and the 'learned ignorance' of Nicolas of Cusa.

Thomas Aquinas. The glory of Albertus Magnus, then, must not be dimmed by that of Thomas Aquinas. The work of the 'angelic doctor' would not have been possible without that of his teacher; and what Aquinas gained by systematic rigour in his work, he lost by ranging too widely. Born in Italy, near Aquino, of noble stock, in 1224 or 1225, Thomas Aquinas was first an oblate at Monte Cassino, and became a Dominican while a student in Naples; thence he was sent to Paris, where he became a pupil of Albertus, and went with him for a short time to Cologne. From then on, he divided his teaching activity between Paris (1256–9 and 1269–72) and Italy, where he died in 1274. These were his great productive periods, during which appeared *Quaestiones*, reflections of university discussions, polemical writings, and several *Summae* (*Summa against the Gentiles*, theological *Summa for the Use of Beginners*, etc.). The essentials of his doctrinal teaching which represented the finished form of a Christian philosophy evolved from Aristotle, are detailed later. It is still debatable how far 'Thomism' is to be seen in its essence in the precisely formulated system, and how far it really resides in a state of mind characterized by the optimistic pursuance of synthesis. Moreover, if the thirteenth century was so dominated by the figure of this thinker as to have been called 'the century of St Thomas', the point should also be made that it could not for all that be described as Thomist. Most of the philosophers regarded as St

Thomas's disciples (Giles of Lessen and Giles of Rome, for example) find themselves at variance with him on points of some importance; and the theses expounded by him were the subject of continual and violent attack from lay theologians and Friars Minor primarily, but also within his own Order.

Bonaventura. The story of Franciscan thought in the thirteenth century is mainly of the efforts made by the advocates of Augustinian thought to 'assimilate the new philosophic learning in the light of principles laid down by St Augustine'. (Gilson.) The essential work to this end was done by St Bonaventura. He was born near Viterbo in 1221, and became first a student, then a teacher, in Paris; from 1257 he was Minister-General of his Order. He died a few months after St Thomas. Bonaventura was first and foremost a mystic, for whom a philosophic advance to truth was among the activities dictated by love. His work has been defined as 'the soul's itinerary towards God', the stages of the journey being the discovery of traces of God in the physical world, the search for his image within the human soul, and, finally, the mystical experience. Such a conception presupposes a theory of the soul and of knowledge. It becomes apparent that Bonaventura's desire was to reconcile the Augustinian theory of sensation as an action of the soul with the Aristotelian concept of sensation as a passion of the composite human individual. It was a delicate synthesis, but one which preserves the central tenet of St Augustine, the divine illumination of the soul. It called forth immediate objections, the result of which was a talented restatement of the theory and the completion of Bonaventura's work by one of his pupils, Matthew of Aquasparta.

Raymond Lull. The difficulties in which the Augustinians found themselves as a result of their efforts to explain, in particular, the effect of this illumination on the intellect, now became an increasing source of embarrassment for them, and even led to the abandonment of some of St Augustine's essential tenets. The tendency to see God's image in his creatures, however, and to look to them for signs of the way of ascent to him, persisted with the Friars Minor, and also lies behind works such as that of Raymond Lull. For him, the fundamental properties of creatures and the relationship between them reproduced in part the properties of God; hence his attempt to present them in his work in all possible combinations, in demonstration of the perfection of God.

Oxford. The Platonism of Chartres persisted in the thirteenth century through the efforts exerted in Oxford, in particular by the Franciscans, but also by the Dominicans. It should be noted here that the interest in optics which was shown by the movement's outstanding personalities, Robert Grosseteste and Roger Bacon, sprang from a neo-Platonist conception of light as the first form created by God from primal matter, and the source of origin of all substances. It was a theory easily reconcilable with the Augustinian doctrine of Illumination, in which the divine light is to the objects of intellectual perception as physical light is to those apprehended by the senses. So

Platonism led to the study of geometry, just as Aristotelianism had led on to the study of the natural sciences.

The Averroists. By about the middle of the thirteenth century, then, an assured position had been won for Aristotle in Paris. The Arts students threw themselves into the study of his works, and in addition, with long pent-up enthusiasm, into the study of the commentaries of Averroes, which had been translated by Michael Scott in about 1230. Averroes had decided that the system of Aristotle, carried by him to its extreme conclusions, which were directly opposed to the idea of revealed religions, was truth itself. Under his influence, there developed in the Paris faculty of Arts a movement often, and not entirely accurately, known as 'Latin Averroism'. Its principal representative, Siger of Brabant (c. 1235 to between 1281 and 1284), reached philosophic conclusions which tended towards an extremist Aristotelian position, coinciding in many respects with that of Averroes. But if he thought the divergence between philosophy and Christian dogma irremediable, he steadfastly refrained from rejecting the second in the name of the first.

Was this the dictate of caution? The division had in any case been perceived to be dangerous. From 1267 onwards, first Bonaventura and then Thomas Aquinas had been reacting against it, and had written several treatises in opposition to adherents of Siger. It was at this same stormy period that disputes arose also between St Thomas and the Friars Minor. In the end, a formal condemnation was issued on 7 March 1277 by the bishop of Paris, of 219 propositions, hastily extracted from suspect works, and arranged without system. Advocacies of magic are interspersed with theses propounding the effective opposition to fundamental Christian dogma, and with elements of the Thomist system, which, forty-eight years later, were exempted from the condemnation. It can thus be seen that the condemnation was aimed beyond Siger of Brabant, who was obliged to make his submission and leave Paris, and at Thomas Aquinas himself.

What was the exact significance of this condemnation? Averroism in Paris was broken, at least for a time; the progress of Thomism was slowed. But there could be no question of discarding the contribution of the thirteenth century. On the contrary, it has been maintained by P. Duhem that the shaking of the philosophic authority of Aristotle that then took place was the source of greater freedom for scientific investigation.

The historical outline just presented must not, and particularly not where Byzantium is concerned, be taken as definitive in all respects. As the vast bulk of philosophic writing is sifted, authors hitherto neglected receive their due, and connections are established. Greater confidence may, however, attend the attempted exposition of the 'Christian philosophy' that emerged.

B. Elements of a Christian Philosophy

Reason and Faith. The discussion of these is best preceded by an attempt to

define what a Christian philosophy may consist of. This involves the question of the relationship between Reason and Faith, a problem with which Christian thinkers have always been preoccupied, but one which they have been resolving with an increasing measure of clarity since the work of Anselm of Bec. Their theories do not always coincide: Roger Bacon reduced philosophy to 'the explanation of divine wisdom by doctrine and moral conduct', while Thomas Aquinas drew a sharper line of demarcation.

All these thinkers were at one, however, in thinking that since the Revelation philosophy as it had been was no longer possible, which was not to say that the practice of philosophy must be forsaken. On the contrary, though faith might be sufficient unto itself, it would lose nothing and gain something by being rationally expounded; reason, after all, also came from God. It is the '*fides quaerens intellectum*'⁸ of St Anselm. This states problems to which the Christian philosopher in fact devotes himself: the problems concerning God, and the soul and its destiny.

Uncertainty remains as to just how far along such a path reason may go. For Thomas Aquinas, mystery and the undemonstrable were inherent in Revelation. The Trinity and the Creation of the world in time were revealed truths, which reason could show were not contrary to reason, but for which reason was incapable by itself of providing proof. On the other hand, while a discrepancy between revealed truths and the conclusions arrived at by philosophic reasoning were taken as evidence of the incorrectness of the latter, the tracing of the source of error was the task of reason, and of reason alone. It was Aquinas's declared belief that truth as revealed by God and truth as arrived at by the correct exercise of reason must be one and the same, which was the basis his of optimistic desire for synthesis.

The Concept of God. This undoubtedly was where Revelation made its most revolutionary contribution. The Greek philosophers, though some of them arrived at the idea of a supreme god, never in fact eliminated polytheism. For Plato, this Being was possessed of divinity only in its supreme degree, not exclusively; for Aristotle, divinity was the attribute of a class of beings. The God of the Bible, in contrast, who defined himself as 'I am that I am'⁹ could only be unique. His existence is contained within his own definition, it is derived from no other being. He is the one being whose existence is identical with his essence. Beyond that definition, we can have no knowledge of the nature of God; all that lies within our power is to dismiss concepts which are not congruous with him and to clarify our inadequate representations of him. It becomes clearly necessary to attribute perfection and infinity to him—another new concept, since, for the Greeks, infinity was an imperfection.

The Concept of Creation. In every other being, existence is distinct from essence; it is an accident; it can derive only from another being, who is God himself. Here philosophical analysis accords with the first verse of the Bible:

'In the beginning, God created the heaven and the earth.' The Creation concept is also new in relation to Greek philosophy. Plato considered Matter and Ideas eternal; with his eyes upon these, his Demiurge constructed the world. For Aristotle likewise, Matter was eternal, and the function of his Prime Mover was simply to move it, by the love it engendered without experiencing it. For the Christian philosophers, Creation was the absolutely free act of a will, which by love was impelled to activate the universe, and to continue to redeem it from nothingness by a permanent giving. The motive of the Creation lies, through a causal process we are unable to comprehend, in God Himself, and in his goodness, for 'good is diffusive and communicative of itself'. (Thomas Aquinas after others.)

It is this conception which lies behind what has been called 'Christian optimism'. If the Creation was in a sense a gift of God, there must exist some analogy between effect and cause. This idea of analogy has been carried by medieval writers to naïve and excessive lengths; they claimed to see in everything of this world an image of God, and a reflection of the ternary pattern of the Trinity. This symbolism was outgrown in the thirteenth century when the concept of analogy took on a more profound character. In a sense, it may be said that what was now seen to inhere in the existence and form of the universe was the 'style' of God—as the style of a painter is to be seen in his work and that of his pupils. Moreover, if God created it for himself, to associate what he created with his glory, this universe is imbued with a finality, is orientated towards God: a notion which it would be unjust to reduce to the naïve explanations of which, from the Middle Ages to Bernardin de Saint-Pierre, the finalists were to be so prolific.

The Problem of Evil. What, in this God-analogous, God-oriented world, was to be the explanation of evil? This was a problem to which St Augustine, with his background of Manichaeism, devoted particular attention: the idea that matter was the basis of evil was inconceivable if God was in fact the Creator. Augustine, and in his wake most of the medieval thinkers, declared that physical evil was not a positive quality inherent in a being. In a hierarchy of contingent beings, that which appeared as evil, was in reality simply the less good; in matter, the capacity for goodness was at least always present. In the realm of moral evil, the problem was quite different. God could not call man to beatific vision without conferring upon him the intelligence and the will to seek after it—that is, freedom. It so happened that man had made bad use of this freedom (an event not fatal), not by seeking evil as such, but in preferring a lesser good (himself) to the higher (God). Although it was a necessary condition of freedom, this moral evil was the result of sin. But the sin had not changed the nature of man; this nature was not bad, but simply not self-sufficient, in need of the grace conferred by the Redemption. This Christian optimism found its highest expression in the mysticism of a St Francis, but it was one which did not stem from philosophical speculation.

The Relations Between God and the Works of His Creation. Creatures depend absolutely in existence and in essence on their creator. But they have their own being, they exercise their own causality. Christian thinkers were alive to these different aspects, but the kind of balance they observed between them differed. An Augustinian attitude is discernible, as well as a Thomist attitude. The dominant factor in St Augustine's teaching is, of course, the experience of his conversion and his discovery of his own insufficiency. This leads him to detract from human nature, to draw attention continually to insufficiencies which only God can remedy, to glorify him by citing the inadequacies of man rather than by extolling his grandeur. For St Augustine, Creation was an instantaneous act; anything apparently supervening could be but a development of *rationes seminales*.¹⁰ At no time does man do more than arouse these virtualities. In the same way, our intelligence, disposing only of the resources of a nature which is in essence temporal, can attain to truth, necessary and eternal (or to virtue), only by divine illumination.

To such views, those of St Thomas represent a reaction. The *rationes seminales* he reduces to the status of forms potentially active in matter, and he reaffirms the efficacy of the human causality which realizes them. God's real act of illumination consists in having endowed man with intelligence sufficient to allow him to arrive at truth via contact with the world of sense. Augustinians of the thirteenth century reproached him with having thus placed God at a distance from the world and from man. He for his part thought it unwise to decry nature for the greater glorification of God, since nature thus became in the last resort unworthy of its Creator.

The notion of Providence is not specifically Christian. It is already to be found in Plato. But the Christian form of it has its special characteristics. God naturally rules over the world he has created; having created even the humblest of its creatures, he has individual knowledge of each of them, loves them, and has fore-knowledge of all that will happen to them. They are governed no longer by imminent calamity, but by a transcendent Wisdom, which associates reasoning beings with its work. Human foresight is to divine Providence what human causality is to divine Creation.

Man. Here we light upon one of the major difficulties of Christian philosophy: how to reconcile the immortality of the soul and the unity of the composite entity that is man? Christian thinkers had been attracted to Platonism, which held that the soul was immortal, and independent of the body, which received life from it: 'a rational soul with a mortal and earthly body in its service' (St Augustine). These views were in conformity with the Platonic view of things, in which the union of soul and body was seen as an accident, but not with the Christian one, since the Gospel proclaimed the eternal life of the body and soul as united in man.

The Christian philosopher came to prefer the Aristotelian solution: in common with all other beings, man is a composite entity made up of matter

(the body) and form (the intellect). This re-established the unity of the composite human entity, but also jeopardized the immortality of the soul. When the union of intellect and body came to an end not only did the body cease to exist, but the intellect did also. Bonaventura and Albertus Magnus, citing the authority of Avicenna, produced a definition of the soul: a substance exercising the function of form; when the body died, the soul merely ceased to exercise its function. Thomas Aquinas was quick to perceive that this activating function must then be included in the essence of the soul, or the union of body and soul would be merely an accident. To bring about this inclusion, he produced a definition of man: a composite entity, made up of corporeal matter shaped by a form, together with an intellectual substance informing and ordering the matter.

So the immortality of the soul was saved. There remained the question of its personal immortality. If, as Aristotle holds, matter is an individuating principle, the soul, once separated from the body, survives in a return to an impersonal Intellect. Here again, Aquinas found himself obliged to go beyond the philosopher: the individuating principle is indeed matter, but the true individuality of the individual does not reside in its material realization, but in its total substance; it must be as much a property of the form as of the matter. By such means a personalism that had been unknown to Greek philosophy was safeguarded. The individual, who is, by virtue of his reason and his freedom, a person, and is thereby connected with the personal God of Exodus, becomes more important than the species of which he is a member.

Knowledge. There is a 'Christian Socraticism' according to which the pursuance of knowledge of himself by man is of supreme importance, not only as a means to the establishment of principles of conduct, but as leading towards God. 'God made man in his image and likeness in thought: there is to be found the image of God. Hence it is that thought itself cannot be understood, even by itself, in so far as it is the image of God'—so affirmed St Augustine, who confesses to the terror which this opening out of his soul towards the infinite inspired in him.

Was this Socraticism to be linked with the Platonist depreciation of the tangible world? St Augustine thought so: he held out no prospect of the physical senses ever guiding man to truth, since what they perceived was in continual process of change. Thomas Aquinas, on the other hand, believed that the Christian thinker should be a realist, as it were, by vocation. God must have instituted some deep concordance between man and the world, since both were alike of his creating; truth, in the absolute sense, is none other than this ontological accord between being and mind. The logical validity of judgment follows from this same deep concordance. It is an attitude of optimism favourable to the development of experimental science, but one which demands of it also, over and above the study of nature, the attainment of the wisdom of God himself.

The Foundation of Morality. There was already implicit in the Aristotelian analysis that notion of human freedom with which Christian philosophy is linked. It distinguished between the desire arising spontaneously in man for his natural end, happiness; the rational consideration of the means by which to attain it; and, finally, the act of will by which one of these means was chosen. In seeking the roots of freedom, the Christian thinkers stressed primarily one or other of these aspects: the capacity of the will to determine itself from within (the voluntarism of St Anselm, and, later, of Duns Scotus), or the free exercise of the reason in making judgments (the rationalism deriving from Boëthius). It was the concern of Thomas Aquinas to effect the synthesis of the two tendencies.

For Christianity, however, the problem of liberty arises in addition on the moral level: what relation is he to postulate between psychological free will, and the freeing of man from sin by Grace? St Anselm and St Thomas clearly affirmed that the freedom of a fallible being will lie in its quality of voluntary action, not in its fallibility. In sinning by virtue of this liberty, man has, by sin, diminished it: not as regards his power to act or not to act, or his power to choose between several possibilities, but because his quality as a man had been lowered. It is this part of liberty that Grace restores. Liberty affirms itself fully in its infallibility. At the limit, God is perfectly free.

The problem of liberty was thus resolved in terms of an end transcending man. This transcendence constitutes the foundation of the whole of Christian morality. God has 'concreated'¹¹ the moral law in man. By acting in obedience to his reason, man acts in obedience to an eternal law, superior to himself. Morality is thereby at once interiorized and, as it were, made divine. It is interiorized, because man must render account of his thoughts to God; the sin precedes the evil act, being present in the intention. It is made divine, because God suffers as a result of any act that is effectively evil, even though it be dictated by a mistaken conscience; only the act dictated by a conscience not in error is in truth good. It is a profound transformation of the morality of the Greeks, in which the end pursued by man is immanent in him, and all that ultimately counts is the prevalent habits, be they virtues or vices, which fashion the human being. In the Christian moral framework, every act of significance counts in itself, for in a certain sense it touches God in violating his handiwork.

Love of God. In this morality, the essential element, and the one most foreign to the Greek, is the love of God, a love of which human desire is a false image, revealed as such by its insatiability. This love God himself has placed in us, so that, if we seek God, it is, in a profound sense, because we have already found him. We are in some measure the 'created loves of God', and it for this reason that, in loving God above all things, we are in fact loving ourselves.

Conclusion. Thus this 'Christian philosophy' made use of the thought of the Greeks, pre-eminently the work of human reason entirely dependent on its

own resources. But it also went beyond it, with the aid of the Biblical Revelation. Its essential contribution would seem to have been 'the considered affirmation of an intrinsic reality and goodness in nature, of which the Greeks could have no more than a presentiment, lacking knowledge of both its origin and its end'. (Et. Gilson.) It is a contribution that may be viewed, of course, either with approval or with regret. What can scarcely be called in question is the fact of its historical importance. As there was a Christian art, so there was a Christian philosophy, the achievement of which was to give precise formulation to the basic concepts of metaphysics and epistemology, and without which neither the work of Descartes nor, of course, that of Pascal, Malebranche, Leibnitz, Kant, or many others, would have been conceivable.

3. LEGAL AND POLITICAL THOUGHT

Law is by necessity a product of social life and a manifestation of culture. Where the provisions of the law show a sensible adaptation to the conditions of the *milieu*, and have both a logical coherence and a validity in respect of the promotion of equity, this may be taken to indicate a high level of culture. Where jurists prove themselves capable of elucidating fundamental principles by a rational analysis of the provisions of the law, and, through such an analysis, of systematizing and improving these provisions, law becomes a science.

Roman juridical science had developed these qualities to a very high degree. Not only had it established a method, but it had formulated principles the validity of which extended well beyond the immediate *milieu* of their origin. The history of law in the two medieval branches of Christendom is in each case instructive in this respect. In Byzantium, the preservation of the Roman tradition facilitated the adaptation of the law to new conditions, and ensured an admirable continuity; in Western Europe, the rediscovery of the Roman tradition encouraged the renaissance of juridical studies, on which most of the legal systems, which had meanwhile developed, drew to their advantage.

A. Legal Thought

Byzantine Tradition and Innovation. Roman law could not be applied in the Byzantine world as it stood. Two factors, fortunately, made it possible to adapt it. As the successor to a line of Caesars, and a Caesar himself, bound by their laws and his own, the Basileus was the embodiment of the living law. It was possible for him, following legal precedent established by long usage, to abrogate, modify or supplement laws in the public interest. Juridical instruction in Constantinople and, until the earthquake of 551, in Beirut, produced a host of jurists who were capable of demonstrating inadequacies in the traditional law and proposing remedies. The huge bulk of the legal corpus, and the requirements of instruction, also led several emperors to initiate the compiling of official collections and to confer on them legal authority, thus departing

from the private collections of ancient Rome. The great legislative periods are marked by these codifications.

The *Corpus Juris*.¹² The first of these was during the fruitful reign of Justinian, which saw the production, in Latin, of the *Corpus juris*, supplemented by the *Novels*, which were issued by the Basileus in Greek. The law as here presented had already undergone appreciable change in relation to the law of ancient Rome. A number of provisions taken from the old Greek law and the usages of Syria had been incorporated, so that, in matters of adoption, emancipation, and compromise, the written document had taken the place of the rites of the old quiritarian ceremonial. Before Justinian died, the *Corpus juris* had already been translated into Greek, Latin by then being no longer understood in Constantinople.

This *Corpus juris* remained for a long time the basis of law, albeit various laws, or collections of rulings, were added to it, which tended to accentuate the oriental aspect, with the introduction of new provisions such as that of the loss of a hand as a penalty for counterfeiting. Well before the ninth century changes began in legal practice. With the *Ecloga* of the Isaurian emperors, we find an entirely new penal system: the death penalty and most punishments restrictive of liberty have disappeared, and are replaced by corporal mutilations, which are generally understood as a Christian attempt at mitigating the harshness of capital punishment, enslavement, or work in the mines. At the same time, and more so in the successive centuries, we begin to find compilations of state-approved customary law, such as the Agrarian Law, the Nautical Law (later, the guild statutes of the Book of the Prefect), most of them impossible to date with precision or certainty. Then there are more lawbooks and individual novels issued by the emperors, such as (in the first category) the *Procheiron Nomos* of the Macedonian Emperors and (in the second group) the laws by the same emperors concerning peasants and military estates. The *Basilics* are a methodical re-grouping, due to the labours of Basil I and Leo VI (the Wise)—they form the largest body of law ever put together in the Middle Ages anywhere in Europe; but their length, if nothing else, made them unmanageable in ordinary court use, except in the form of summaries of which there are many. The original contributions of the *Basilics* has been the subject of much discussion, and the conclusions maintained by Professor Robert Lopez, that they do contain more new material than is generally believed, have not met with general acceptance.

After the eleventh century, legal practice continued to evolve, as it appears from private documents. But the juridical works of the twelfth and thirteenth centuries contain little that is original.

Church and State. Byzantine law was the law of a Christian Empire. The Church had its own law, constituted by the canons of the Councils, a number of patristic writings, and the synodal acts of the patriarchs of Constantinople. But the constant collaboration between Church and State, and the rôle the

emperor was recognized as playing in a Christian state, meant that there was also imperial legislation which concerned the Church. The canonists regarded as their principal task the bringing together of laws emanating from these two sources, in collections which never themselves acquired an official character. John Scholasticus, a lawyer of Antioch (c. 570), was the originator of this type of collection, or Nomocanon, as it was called.

The Law in Russia. The diffusion of the Byzantine law through the Slavonic countries would seem to have been effected mainly through the intermediary of the clergy—that is, if we are to judge from the case of Russia, where, we must admit, the available documentary evidence poses some rather delicate problems of interpretation. It seems from a judgment in the collection known as the Ordinance of Yaroslav, in which this prince distinguishes between the respective domains of temporal and spiritual jurisdiction, that a whole code, elaborated by the clergy, was added in the twelfth century. It is in the ecclesiastical realm, of course, that the Christian and Byzantine contribution is most noticeable. The *Russkaya Pravda* (Russian Justice) is fairly clearly a juridical compilation intended for the use of ecclesiastical judges trying for temporal offences persons who fell in any case within their competence; it was doubtless also used subsequently by princes acting as judges. In this compilation, drawn up, in its essentials certainly, early in the twelfth century, and gradually added to, Byzantine influence is shown in the method of approach and in certain of the articles. But what is assembled in it is first and foremost Russian customary usage, in its most urbanized form, princely decrees or sentences, and legal projects prepared by the clergy for the princes, concerning, for instance, family law.

Latin World: God as the Source of Law. In the Latin world, the invasions had brought about a kind of juridical fusion, aspects of which have already been referred to.¹³ About the tenth century, in the larger part of Europe, however, the ignorance of the judges relegated both the Roman legal compilations and the barbarian laws to oblivion. The personality of law was no longer applicable; what now prevailed was territorial custom. A conception of law now took root which was in origin Germanic, but for which, curiously, support was found in religion, and which was still, in the thirteenth century, to retain considerable strength, particularly among the people. This new theory ran as follows: law is not a creation of the state; the source of all things is God; law is therefore of very great antiquity, and its manifestation is in the human conscience. Law is not, then, really to be made: it is to be discovered, by consulting the collective conscience or those taken to represent it, and by studying the ancient documents. Thus law merges with morality. The promulgation of laws against tradition and the sense of justice had no tangible juridical effect; the ancient law persisted in the face of misusages, and necessitated their retraction. On the other hand, custom was not as immutable as might have been expected; memory, unassisted by a written record, inevitably distorted it. And where a

discrepancy between custom and the sense of justice became evident, it was put down to the unnoticed infusion of a misusage. Custom was then adjusted to new needs, in the belief that what was being effected was a return to the good ancient customs.

Differences in Customary Law. These customs reflected the fragmentation of the feudal system, and varied from place to place, although their common origins meant that a family resemblance was apparent between some of them. This statement, however, is not equally valuable everywhere. In Anglo-Saxon England, knowledge of the written laws (customary by origin and nature) never lapsed, and new ones were added by legislation. In Christian Spain, the Asturo-Leonese state, claiming the heritage of the Visigothic monarchy, exerted deliberate effort to keep alive respect for the *Liber judiciorum*, though in practice the local custom was generally applied.

The Law in Italy. In Italy, despite the Lombardic invasion and intellectual decline, the Roman law, resuscitated by Justinian, never suffered a complete eclipse. The memory of it was preserved in an incomplete sixth-century summary of poor quality, known as the *Epitome Juliani*. But the work which reflected the labours of the Roman jurists, the *Digest*, was of too high an intellectual level for the period, and could find no place in it. Certain rudiments of law thus continued to be taught.

Pavia, capital of the kingdom of Lombardy, was also a centre of real judicial studies. Jurists, brought together by the Royal Tribunal worked, on Roman lines, on compilations of Lombardic laws, and their annotation and adaptation to practical requirements. From the eighth century onwards, the school at Pavia customarily attracted some students from all over western Europe. Credit must thus undoubtedly go to it for local revivals of legal knowledge such as that of which we have evidence in a work composed in Provence about the middle of the eleventh century, the *Exceptiones Petri* (Excerpts made by Peter). It was in Lombardy also that men, who were later to play important parts in the affairs of the century, received their legal training: Lanfranc, archbishop of Canterbury, for instance, and Ivo, bishop of Chartres.

The Evolution of Canon Law. The evolution of canon law has its own light to throw. The Church was obliged to tolerate usages which, in greater or less degree, were imposed by the barbarian kings; the abuses which they represented also varied in magnitude. The canonists proved incapable of doing more than reassembling the texts, and occasionally classifying them. Most of the canonical collections made after the eighth century to generalize usages or establish pontifical authority give evidence of habits of mind which were lamentably slack. There were digests that distorted the text, interpolations, and the attribution of decrees to imaginary Councils. Some progress is nevertheless discernible in the early years of the eleventh century, as for instance in the *Decretum*, composed about 1010 by Burchard, bishop of Worms, which was received with acclaim.

The Contest between Papacy and Empire. These first signs of an intellectual awakening explain the intensity and fecundity of the discussion excited by the contest between Papacy and Empire. The emperors looked at Roman law, which exalted the imperial power, as an ally, and Ravenna became a centre for the study of it. Gregory VII inaugurated an immense campaign of search through the archives and libraries of Italy for papal letters, canons of Councils, patristic writings, and the texts of work by historians, in an effort to secure the more assured establishment of papal supremacy, the disinterring of precedents for the reformist measures he was adopting, and the elimination of apocryphal texts. The harvest reaped was considerable not only in ecclesiastical matters. For it is very likely that a manuscript came to light of the *Digest* of Justinian in the course of these researches.

The Glossators. This discovery was in itself sufficient to bring about the founding of the school of Bologna, an institution whose real founder would seem to have been Irnerius. It was he apparently who introduced there a commentary on the *Corpus juris* according to that dialectical method which Abelard would slightly later apply to theology. His disciples, among them the 'four Doctors', Bulgarus, Martinus, Hugo and Jacobus, followed his lead, and came to be known by the generic name of 'glossators'. Their method consisted first in the establishment of the authentic text of the *Corpus juris* with its variants (critical glosses), followed by the deduction of its general principles (analytic glosses). These glosses might be no more than notes inserted between the lines of the text or in the margin; they might, however—and this was frequently the case—be expanded to the dimensions of independent works. The glossators also produced *Summae*, or independent résumés. The *Broadcardica* consisted of collections of general principles reduced to their briefest formulation, to which the glossators then often opposed contrary affirmations, so that the contradictions might be resolved by the dialectical method. The part played by discussion in this legal teaching was in fact a major one. The glosses, however, grew with extraordinary rapidity: they themselves had also to be systematically assembled and commented on, and efforts to this end led to the production, about 1250, of the *Glossa Ordinaria* of Accursius.

The Glossa Ordinaria. The *Glossa Ordinaria* was a work of major importance. In it were displayed a talent for classification, a logic in the application of principles, and a subtlety in the art of their reconciliation, that induced in the students of Bologna real juridical expertise. The perils of over-subtlety were offset by the soundness of the material on which the procedure is brought to bear. The spirits of medieval scholasticism and Roman jurisprudence are here combined in a science which was to have lasting influence on the juridical development of Europe.

The Commentators. What the glossators lacked was a certain historical perspective. They were almost entirely ignorant of Roman history, and of the conditions under which the Roman law, which they expounded as if it were still in

active use, came into being. In the second half of the thirteenth century, Bologna legal teaching took on a more realistic character, and showed a readier appreciation of the temporal conditions. It passed now into the period of the 'commentators', whose work consisted in a breaking away from the traditional forms of the law, and a transformation of Roman law as it came into contact with laws currently in application, such as local customs and privileges of various kinds. The activity of the glossators and commentators made for the easier penetration of Roman law into the various countries of Europe.

Gratian. Parallel with these advances were others in canonical law. The enrichment of canonical law following the work accomplished under Gregory VII, is evident in new compilations such as those of bishop Anselm of Lucca and cardinal Deusdedit. However, just as the principles of the Gregorian reform had proved impossible to impose *in toto*, so these works failed to oust their predecessors from authority. The need for compromise was apparent, and to pope Urban II goes the credit for having effected one on lines drawn by recourse to the dialectical method. He endeavoured to make a distinction in the canonical legislation between that part of it which was immutable and the elements that varied with the period or the persons concerned. His work provided encouragement for men like Ivo of Chartres and Bernold of Constance, who were engaged on the comparison of canonical texts, the elimination of apocrypha, and the investigation of the conditions governing the elaboration of the authentic texts, and in an attempt to establish some hierarchy among them. The fruit of these labours was the appearance, about 1140, of the *Concordia Discordantium Canonum* by Gratian, a teacher at Bologna; this was a fundamental work rendering all previous collections obsolete. The way was now open for the development of a science of Canon Law. Additions, in the form of canons laid down by Councils and pontifical letters (or Decretals) were to be made so rapidly that, in further compilations, the provisions had to be assembled by subject. Canon law was included now among the subjects of university teaching, glossaries, treatises, and *Summae* being devoted to it as to Roman law.

Romanists and Canonists. It would be as well to emphasize the parallel nature of these two developments. Advances made as a result of the study of Roman law were drawn on to the profit of canon law, and the process took place equally in reverse. Students of Decretals flocked to Bologna exactly as did pupils of the Romanists, and they went away imbued with a legal culture that they diffused in their countries of origin. Being the fruit of long and deliberate thinking, Roman law had a universal validity, in virtue of which it was applicable in these countries. Canon law, by definition, imposed itself throughout the Christian world.

New Legal Requirements. Note should also be taken here of the major modifications that had taken place since the eleventh century in the juridical *milieu* in which their influence was to be exerted. The development of feudalism had

found expression in a large number of legal rulings. The rise of the towns and the great changes in rural life, had led to the granting of franchises and other privileges; the requirements of city life had brought into existence a whole corpus of specialized law, both urban and professional. From the twelfth century onwards, certain states no longer confined themselves to the granting of special privileges. Increasingly it was recognized that what was needed was the supplementing or amending of the custom law, and attention was directed to specifying the conditions under which such modifications should be made. Tradition, as far as the law was concerned, no longer met the case: the diversification of human relations brought a demand for rethinking and invention. This is the explanation of the fecundity and, at the same time, of the limitations of the Romanist and canonical influences, which varied in the different countries.

The Law in France. In France, canon law was accepted without great difficulty; only towards the latter half of the thirteenth century did kings and nobility take alarm at the extension of ecclesiastical jurisdiction. Roman law had a rather different history. French students returning from Bologna were teaching it quite early on; and Placentinus, one of Bologna's masters who was born at Piacenza, gave at Montpellier (where he died in 1192) what proved to be seminal courses in it, which were attended by students from all over France. But Roman law stressed the power of the emperor; the monarchs of France were thus distrustful of it, and Philip Augustus even obtained from the pope a prohibition of the teaching of it in Paris. This ban was enforced until, towards the end of the century, it was recognized that 'the king of France was emperor in his kingdom', and Philip the Fair surrounded himself with 'legists'. In the interval, Orleans, where the Benedictine Jacques de Revigny taught, and later Toulouse, had became centres of diffusion for the *leges*, as the Roman law had come to be called.

The influence of this law varied considerably in different places. In southern France most of the customs incorporated provisions of Roman origin, which had been transmitted through the *Breviary* of Alaric. Provence had early been a centre of Romanist revival, and, about the middle of the twelfth century, there appeared the first treatise on Roman law in the vernacular: *Lo Codi*. In the thirteenth century, the Roman character of these southern laws, grouped under the overall heading of 'written law', was recognized. In fact, divergences between them and the *Corpus juris* were still many, and the imposition of the latter through the action of jurists was to be a work of several centuries.

In so-called 'customary' country, that is to say, the northern half of France, the Roman influence was less marked, but it is still in evidence here in a number of works and customaries produced during the reign of Louis IX: the *Advice to a Friend* of Philippe de Fontaines, bailiff of Vermandois; the anonymous *Livre de Justice et de plet*, which issued from the school of Orléans; a private compilation under the title *Etablissements de St Louis*; and, pre-

eminent in all this literature, the *Customs of Beauvaisis*, written about 1280 by Philippe de Beaumanoir, bailiff of Clermont-en-Beauvaisis. The aim of this author was simply to produce a commentary on the legal practice of a particular region. However, in doing so, he not only displays a notable juridical sense; in the case of ambiguity or inadequacy in the customs he is dealing with he also does not hesitate to refer to those of neighbouring *seigneuries*, or even to the 'common law of the kingdom of France', that is, to legal rules accepted in practice by the majority of French customs. In this matter of generalized acceptance, the influence of Roman law, with which the author himself was well acquainted, was strong. Beaumanoir's work thus testifies simultaneously not only to the strides made in legal culture, but also to the penetration of French law by Roman principles. This process can be seen notably in matters of procedure, in the protection accorded to possessions, and in family law and the law of contract. This is a development to be attributed, not to the action of the monarchy, but rather to the jurists, and hence to the particular qualities of Roman law.¹⁴

The Law in the Iberian Peninsula. In the Iberian peninsula, penetration by canon and Roman law was no less extensive than in France, but somewhat different in character. Here, as in France, a number of the common law provisions were of Roman origin. But, and in particular where family law was concerned, the Germanic characteristics of these were also well to the fore, which is all the more surprising in view of the fact that the official Visigothic law itself had been strongly Romanized. The persistence, alongside the Roman elements, of Germanic customs introduced at the time of the invasions had been admitted (though some Spanish scholars now tend to consider as indigenous many such customs).

The most striking thing about the legal development is its early date—a consequence of the Visigothic tradition, perhaps, or of the need to meet problems arising out of the *Reconquista*? As early as 1017, at all events, the king of León was promulgating laws of a general nature. Around 1060, the count of Barcelona had a collection made of the *Usatges* of his court. In the course of the twelfth and thirteenth centuries, the *Cortes*, made up of representatives of clergy, nobility, and burgesses, began to assist the monarchs in their task of legislation; and the compilations are the products either of official action (e.g. that of Aragón law, the *Código de Huesca*) or of the work of individuals (e.g. those of Castilian law, the *Libro de los fueros de Castilla* and the *Fuero viejo de Castilla*).

All this is evidence of a comparatively high degree of legal culture. In Catalonia, for instance, the teaching of Roman law was scarcely interrupted. A number of Spanish students also received their training at Bologna, and, in the thirteenth century, the universities of Valencia and Salamanca were centres of diffusion of the 'Laws' and the 'Decretals'. In this way were produced such scholarly jurists as Magister Jacobus, Fernando Martínez de

Zamora and, in Catalonia, Raymond of Penyafort, author of a *Summa juris*.

Alfonso X. Assisted by men such as these, the Castilian king Alfonso X (the Wise) was able to carry out a project which was undoubtedly, in the legal field, the most remarkable achievement of the thirteenth century. His aim was the unification of the law of his kingdom, and the incorporation of its principles in juridical science, as this had been developed at Bologna. At his instigation, a code was drawn up, the *Fuero Real*, which drew alike on Castilian and Roman law, and which he caused to be put into effect in numerous cities of his kingdom. Alfonso's essential work was the *Libro de las Leyes*, known also as *Siete Partidas*, after the number of its chapters. Written in Castilian between 1256 and 1265, this was a real encyclopaedia, presenting an exposition, not of Castilian law only, but of the whole of juridical knowledge as it then stood. The variety of its sources, the attempted bringing of Castilian laws into line with what were recognized to be the soundest principles, the literary quality of the presentation, made it a work of outstanding importance. That it met with almost immediate recognition as such is testified to by translations into Catalan and Portuguese.

Maritime law. Catalonia should also be mentioned for the part it played in the formation of a body of commercial and maritime law: by its very nature, maritime law was rooted in customs that spread from their place of origin to the rest of the Mediterranean, so that all maritime nations contributed to a common pool. In the twelfth century, certain maritime statutes appeared, which were based more or less on the maritime law of Rhodes, the earliest known to us being the *Constitutum usus* of Pisa (1156–60). It was not until the thirteenth century that there appeared in Barcelona the collection of *Costums de la Mar*: but in the fourteenth this was revised, and combined with other elements, in particular the Atlantic legislation of the *Laws of Oléron*, and the product of this fusion, the *Libre del Consolat de Mar*, came to be, particularly in the Mediterranean, an essential landmark of maritime law.

The Law in England. In England, the sturdy growth of an indigenous law caused the influence of Roman and canon law to be restricted. When he conquered England in 1066, William of Normandy was eager to maintain Anglo-Saxon law, which had been carefully preserved in writing, and which attributed to the sovereign eminently desirable powers. The content, however, required assimilation, the difficulty of which was accentuated by the difference of language. Hence, in the latter part of the eleventh century and the beginning of the twelfth, there came into being a whole juridical literature (*Liber quadripartitus*, *The Bilingual Code*, etc.), which acted as a kind of clarification of the position, in which the juridical gifts of the Normans, grafted on to the Anglo-Saxon trunk, were already apparent. These were to come to full fruition under Henry II (1154–89), in the course of whose reign was established the procedure of jury inquest in the arraigning of criminals, and also in the preparation of legislative measures, which was in future to constitute such an

important element of English law. In the same period, the development of the king's courts paved the way throughout the country for the triumph of a 'common law' by which local customs and privileges were relegated to a position of secondary importance.

From Lanfranc to Thomas à Becket. The introduction of canon law and Roman law should be seen as forming a kind of counterpoint to this evolution. Lanfranc, brought from Normandy by William the Conqueror and appointed archbishop of Canterbury, was familiar with Lombardic law (which was fairly close to the Anglo-Saxon) and with canon law, and had some acquaintance with Roman law. One of William's successors brought to England an Italian jurist, named Vacarius, who taught Roman law, and produced for the benefit of poor students a condensed version of the *Corpus juris* (1149). Not a few English students also attended courses at Bologna.

Between the lively English law and these 'importations', there was often a clash. The line of demarcation between lay and ecclesiastical jurisdiction was the subject of a dramatic struggle between Henry II and Thomas à Becket, archbishop of Canterbury, in which the latter forfeited his life. Though he failed to impose his view in its entirety, the king succeeded in restricting the field of operation of canon law more effectively than was the case in any other country. The Romano-canonical influence in England made itself felt principally in matters of method, as a result of which English juridical literature became of the first importance.

From FitzNigel to Bracton. Already, under Henry II, the treasurer royal, Richard FitzNigel, had produced, in the *Dialogue of the Exchequer*, a clear and effective exposition of the functioning of that central organ of English finance, constituting what was for the period a unique treatise on administrative and financial law. About the same time there appeared the *Tractatus de Legibus*, a work which for long has been (but quite surely erroneously) attributed to Ranulf Glanvill, chief justiciar of Henry II. This is an extremely clear exposition of English law, based on the jurisprudence of the king's court and omitting all mention of local custom. It was followed, in 1240, with equal assurance and talent, by Henry of Bracton with his treatise *On the Laws and Customs of England*, really a masterpiece of juridical literature.

The Law in Germany. In Germany, matters took a very different course. Up to the thirteenth century, the most generally prevailing law was the Frankish. Effectual resistance to this had come only from Saxon law, which had spread with it towards the East, as colonization took place. The emperors, regarding themselves as the successors of Charlemagne, followed Frankish law. But imperial legislation, its scope confined to the maintenance of the public peace and to one or two constitutional questions, was published most unsystematically, and it had but little influence. On the other hand, although certain of the emperors, Frederick I (Barbarossa) in particular, were concerned to establish their power on the basis of Roman law, this was expressed only in

the adoption of a superficial phraseology. Roman law did not effectively penetrate into Germany until the fifteenth century.

The thirteenth-century crisis in the imperial power led, as far as law was concerned, to its fragmentation between the territorial principalities. The desire for unification and rationalization found expression in juridical works by individual authors, the most remarkable of which was the *Spiegel der Sachen* (Mirror of the Saxons), composed between 1215 and 1235 by Eike von Repgau. The writer, a knight of east Saxony, was here attempting to present a picture of Saxon law: what, however, he gave was in fact no more than a survey of the laws of the region in which he was born. His work combined a tendency to confer legal status on current developments with deliberate traditionalism, and in so doing contributed to the process of their establishment. The treatise met with an excellent reception, which the speculative talent displayed in it—the more remarkable since the author had had no Romanist training—amply justified. The same century saw it translated into High Saxon, into Latin, and then into Polish, and a number of courts took the *Spiegel der Sachen* as the basis of their decisions. Two other compilations—inferior ones—the *Spiegel alle toeutzher loeute* (Mirror of the Germans) and the *Schwabenspiegel*, originating perhaps from Augsburg, were modelled on it. The adoption by many towns of urban systems of law, such as those of Magdeburg and Lübeck, contributed further to the countering of the legal fragmentation.

Conditions in Germany, then, were probably the least favourable for juridical advance: there was no strong central authority, and the influence of the science of Bologna was negligible. Everywhere else, in varying degree, there was to hand in Roman law an excellent basis for the rationalization of law which was called for by the growing complexity of social relations and a higher intellectual level. 'Europe without the Digest,' as the English historian, F. Maitland, aptly put it, 'would not have been Europe as we know it.' The influence of Roman law was especially strong in Italy, where it was regarded as the model of local legislation, the supplement to it wherever local laws were incomplete, and, above all, a 'common law of all men'. This does not mean, of course, that lawyers endeavoured to turn back the clock and impose on a changed society the obsolete regulations of the ancient Roman Empire; but the scarce development of feudalism, the high level of urbanization, and the greater continuity of institutions made the adaptation of ancient law to medieval society easier in Italy than elsewhere. A Roman influence is clearly visible in the *Liber Augustalis*, emperor Frederick II's code for the kingdom of Sicily, and still more in the lawbooks of the virtually independent communes of northern and central Italy.

B. Political Thought

Caesar and God. Medieval thought had a contribution of much greater originality to make in the field of political ideas. At first sight, it is true, it

would seem difficult to cite political conceptions further removed from our own than those of the Middle Ages. But in one respect at least they made a contribution of incalculable significance: the relation between spiritual and temporal authority. The injunction from the Gospels, 'Render therefore unto Caesar the things which are Caesar's; and unto God the things that are God's' established a distinction unknown to antiquity—one which was open, moreover, to very different interpretations, according to the circumstances of its application.

Byzantine 'Imperial Religion'. The area in which the influence of this idea made itself felt the least was very likely the Byzantine East. In many respects, imperial doctrine there was a continuation in a Christian guise, of the old 'imperial religion'. The Empire was seen as willed by Providence for the triumph of good and the uniting of all men in the truth; the end of time would see its translation into the heavenly Empire of eternity. The emperors were the personally chosen vehicles of God for the accomplishment of this great design. Over and above the earthly forms of their accession to the throne (the raising on the shield, and sacring), and whatever the material origins of their power (military uprising, hereditary succession, etc), they were the 'Elects of God'.

Invested with the divine trust, the emperor was not a man as other men. The ceremony of sacring, the anointing, the admission of the basilicus to the sanctuary, the sacerdotal rite of his communion, without making a priest of him, had the effect at least of making him as inviolable as a cleric was. The epithets used to describe him proclaimed his sacred character: he was holy (*hagios*) and divine (*theios*) in much the same way as the ancient Roman emperors, and '*isapostolos*', i.e. equal to the Apostles. Receiving in his mission the support of God himself, he is assured of victory: on coins and in inscriptions and acclamations, there is no hesitation in ascribing to this Imperial victory, as model and symbol, the Cross, the instrument of Christ's victory over death.

This imperial religion had from the fourth century developed its own liturgy, in which numerous borrowings from Iranian usage were incorporated, such as the observance of alternate periods of silence and rhythmical acclamation in the presence of the Emperor, the veneration of the imperial person and its images, and so on. Such features turned this court etiquette into a virtual doublet of the Christian liturgy.

The Limitations of the Emperor's Powers. But, in the last resort, the emperor was not God, he was only his instrument. Thus there were for him limits that had not existed for the pagan emperors. In the ninth century, the emperor renounced the appellation 'divine', which had scandalized many of the faithful. Above all, the honours and powers with which, as God's lieutenant, he was invested carried with them the obligation to impose on his subjects respect for

the divine law, and upon himself the duty to set them an example. A considerable literature enumerating the duties of the virtuous emperor grew up. The Byzantine Church considered it its mission to ensure his fulfilment of them: *ratione peccati*, the basileus is merely one among other believers, subject with them to the Church's jurisdiction. 'If the emperor, inspired by the Devil, issues an injunction contrary to divine law, none are called on to obey him', wrote the patriarch, Nicholas the Mystic, in 912.

The Emperor and the Church. The problem of the relation of the emperor to the Church was thus a complex one. Empire and Church figure as a single organism, emperor and patriarch sharing the direction of bodies and souls. On the harmonious functioning of this division of authority depended the world's well-being. The emperor was *ex officio* the Church's protector, watching over the faithful accomplishment of its mission. He it was who convened Councils and promulgated their decrees; he was responsible for Church discipline. But it was never within the emperor's power to impose a dogma which the body of the priesthood stigmatized as heretical. The frequent imperial transgressions of the moral law met with public condemnation from the more courageous of the patriarchs. In general, feeling within the Clergy over the centuries against the power exercised by the emperor in Church affairs increasingly gained ground.

'Caesaro-Papist' is thus an inaccurate designation of this system. Undoubtedly, as a result of the recognition of the Empire as an instrument of Providence, and the partial confusion of spiritual and temporal of which the emperor was as it were the living embodiment, there lay within it the germ of a contradiction. The Empire was in consequence to know more than one controversy over dogma, with emperor and patriarch on opposing sides. Force of tradition and community of interest, however, exercised a balancing influence, and the basic principles bequeathed by Constantine were never really called in question.

The Latin West: St Augustine. In this respect, also, developments in the Latin West were very different. The invasions had resulted in the break-up of the political framework of 'Romania'. The early Middle Ages saw an almost complete disappearance of the idea of the State. It is in relation to these phenomena that intellectual developments should be considered, taking as a starting-point the work of St Augustine.

In the *City of God*, St Augustine made his reply to the pagans who contended that conversion to Christianity was the cause of the troubles of the Empire. In it he draws a fundamental distinction. There is first of all the City of God, which is a religious society, supernatural in origin and essence. Made up of those one day to know the blessedness promised by God, united by faith in Christ, it moves to its destined goal under the guidance of the Church. But there is also the earthly city, that is, the State, in which Christian and unbeliever live side by side. Though acting from different motives, the Christian

should regard it as his duty to be at one with the unconverted in the practice of the social virtues, for all authority is established by God. The State is thus recognized as having its own goal, albeit an inferior one: the fulfilment of natural justice as inscribed in Roman law.

Political Augustinianism. In the ensuing centuries there developed out of this what has been called 'political Augustinianism'. At the basis of this lay a confusion of politics and morality, and an absorption of natural morality into the Christian conception of justice.¹⁵ The principal task of the sovereign was the observance, and the enforcement of the observance, of the Christian virtues, under the controlling hand of the Church. The pope was often superior to the barbarian kings by virtue of his culture and wider horizons; already Gregory I is found advising them, reproaching them, and even threatening them (though probably with no real intention of ever putting the threats into practice) with deposition or excommunication. The sacring which, from the installation of Pepin the Short (751) onwards, formed part of the coronation ceremony of the Frankish kings is a clear indication of the stress now laid on the religious aspect of the royal power. By the Carolingian period 'political Augustinianism' is fully in force, evidenced alike in the political treatises (which were, incidentally, of poor quality) and governmental practice. Whereas in Byzantium, religion formed, as it were, a department of the imperial political administration, here the state itself became absorbed in its sacred functions. It was a merger from which either temporal sovereign or pope might derive advantage, according to their relative circumstances. Charlemagne, king, then emperor, was the authoritative hand behind the defence of the Church and the conversion of the heathen, and went so far even as to intervene in matters of dogma. As he saw it, it should be the function of the pope merely to offer prayer for the success of the emperor's endeavours. The bishops nevertheless, played a major part in the deposition of Charlemagne's son, Louis I (the Pious) in 833, and in the course of the ninth century the popes, Nicholas I in particular, installed themselves in the place of emperors, thus falteringly progressing in the direction of what was coming to be known as 'Christendom'.

The Two Swords. This direction was the issue at stake in what was to prove a long struggle. In the first half of the eleventh century, the decline of the papacy gave the emperors (whose authority no longer extended, as it had done in Charlemagne's day, over almost all the Christian West) a certain primacy: it was possible for Henry II and Henry III to assume direction of the ecclesiastical reform, and in 1046 Henry III deposed three rival popes and substituted a fourth. This was the situation confronting Gregorian thinkers, the men who supported the movement led by Gregory VII for the emancipation of the Church. For Peter Damiani, the Christians constituted at once a supernatural society (the Church) and a temporal one, the latter having an existence only in virtue of spiritual ends. At the head of this single body, there could be but a single authority, who was naturally the pope. This conception was illustrated

by the image of the two swords: the sword drawn by Peter at the time of Christ's arrest, which represented temporal power, and which Christ commanded him to re-sheath; and the sword of the divine Word. Of the second only the Church should make use, but she was possessed of both; it was the Church who appointed the emperor, sat in judgment upon him *ratione peccati*, and had the power to depose him. To this the rejoinder of the emperors was that they held their power directly from God; they were unable, however, to establish the independence of its aims. It was a conflict which could be resolved only by the defeat of one or other party; as it turned out, it was the Empire which yielded. But later the constitution *Licet Juris* excluded papal intervention in imperial affairs.

Philosophy versus Theology. In the twelfth century, ecclesiastical doctrine completed its incorporation of the earthly city into the City of God. Hugh of Saint-Victor proclaimed the 'unity of the Church', which was the mystic body of Christ. The faithful were ranged in two orders, laymen and clergy, to which corresponded two authorities: but it was a distinction lying within the Church. This pontifical theocracy based itself naturally on the Jewish theocracy of the Old Testament, and the image of a chosen people, directed by God, through the intermediary of priests and kings.

Developments in philosophy might have been expected to undermine these conceptions. Etienne Gilson has drawn attention to the way in which, for a thinker of the Middle Ages, by a sort of law, State stands in relation to Church as philosophy stands to theology and nature to grace. None the less, Thomas Aquinas, whose preoccupation was to allot to reason and natural morality their special field, did not arrive at any clear separation of the temporal order, save in a few isolated pronouncements. Even the 'Latin Averroists', with their complete withdrawal of philosophy from the field of theological control, do not seem to have perceived the political implications of their attitude.

The Ascendancy of the State. The decisive factor was the development of the political situation itself, and the gradual re-emergence, in France and England in particular, of the notion of the state. This came to the fore in the struggles which, a little before 1300, Philip the Fair came into conflict with the pontifical theocracy. The partisans of the French king—men such as John of Paris and Pierre du Bois—broke the traditional unitary conception. They made an unequivocal distinction: the state, founded on natural law, was supreme in the domain of temporal affairs; the Church was the homeland of men's souls, which it was her function to nurture on their way to the City of God. Between the two powers should be a harmonious concord, the principle of which must be sought with God. The monarch continued to bear a moral responsibility, no longer as he was involved in public affairs, but purely in his capacity as an individual. It was a distinction to which Dante, several years later, gave more eloquent and vigorous expression, in his 'Monarchy' the bias here being to

the advantage of the emperor. Such was the eventual effect given in western Europe to the injunction 'Render unto Caesar . . .'

A New Balance of Power. The resurgence of the idea of the state was also expressed there in a new balance of power. In the course of the early Middle Ages, confusion had arisen, not only as between law and morality, but also as between public and private law. Public law was seen simply as the sum of a series of laws relating to the individual, and the law by virtue of which the sovereign held power was not different in kind. In theory, such a conception provided admirable protection for the rights of the subject. Moreover, it recognized these as something more than what we are accustomed to call the fundamental rights of man. The state had no power, for instance, to levy taxes, which would have been regarded as an encroachment on the rights and property of the individual subject; it must be self-sufficient, that is, it must live on the revenues accruing to it from its own domain.

The Rights of the Subjects. In practice, the application of these principles left much to be desired. The king at his coronation bound himself by an oath, which may be thought of as corresponding to our Constitution. Outside the control of the Church, however, the only proof as to whether his governing was in accordance with the law or not lay in the consent or otherwise of his subjects. No obligation was laid on the king to produce specific evidence of this consent; hence he could consider himself justified by the tacit consent implied in the absence of declared opposition. Conversely, every subject could, in principle, take up the cudgels in defence of the law against the sovereign, and demonstrate that in violating such and such an individual right the latter had even forfeited his right to rule. A right of individual resistance thus rested on a premise not of 'social contract' but of common moral obligation, which, however, had the disadvantage of laying open the road to anarchy.

Magna Carta. Feudal law furnished some elements of a better solution: the concept of a contract binding on two parties; the idea of a series of obligations entailed by a contract made progressively more explicit; and a procedure for the recognition and punishment of failures to fulfil such obligations. It was in England that the system was put to practical test. King John having provoked, by violations of feudal customary usage, a rising of a large section of his vassals, found himself obliged to sign Magna Carta (1215). Stubbs saw in this the origin of the fundamental liberties of the English people, but in this he was greatly in error. What Magna Carta did do, nevertheless, was to extend to the general body of 'freemen' of the kingdom the feudal concept of a reciprocal relationship based on a kind of contract. Even so, however, the sanction envisaged remained a rudimentary one: a Council of twenty-five barons elected by their peers was to enforce royal respect of the charter, by way of summons, or if necessary, in the last resort, by a general armed revolt.

The Cortes and the États. Nowhere more than in the Iberian peninsula did the

need make itself felt to interest the population in the principal task of the State, in this case the direction of the *Reconquista* and the resettlement of regained territory. It was here that monarchy and people came soonest to a working understanding, through specific institutions, known as the *Cortes*. In 1188 at the latest, in León, delegates of the towns joined forces in these with nobles and prelates; in that year, and with their co-operation, king Alfonso IX drew up a charter by the terms of which he bound himself 'neither to make war or peace, nor to conclude treaties, without convening the bishops, nobles, and goodmen by whose counsel I should be governed'. This representative system made its appearance in Catalonia in 1218, and in the middle of the century in Castile. In England, it was from the vicissitudes of the War of the Barons (1258–72) that there gradually emerged the custom of convening 'parliaments', to which were called barons and prelates, knights of the shires (1264) and delegates from the boroughs (1265). In France, the *États* were not developed until the fourteenth century. The process by which the organization and powers of these various assemblies took definitive shape was moreover a gradual one. The concept of a majority decision as binding on the minority, in particular, found acceptance only slowly.

Roman Law and Political Concepts. Slow to make itself felt, also, was the influence of Roman law on political concepts. Even when such formulas as the famous *Quod principi placuit legis habet vigorem*¹⁶ are employed, it is usually accompanied by the attribution to them of a meaning at some considerable remove from that assigned to them by the ancient Romans. The appearance in thirteenth and fourteenth centuries of documents giving statements with an absolutist ring is misleading. The idea that law is created by the sovereign, and the concept of *raison d'état* were to come into force only in the course of later centuries, pending the establishment in England in the seventeenth century and in other countries in the eighteenth, of a stable balance between the rights of the subject and the powers of the State.

NOTES

1. See Luigi Pareti *et al.*, *History of Mankind: Cultural and Scientific Development*, Volume II, *The Ancient World* (London and New York, 1965) pp. 891–2.
2. See above, Part I, Chapter I, pp. 47–9 and Chapter VII, pp. 440 ff.
3. It must be noted that, in spite of the dogmatic link with Iranian doctrines, the popular dualism of the Paulicians and Bogomils was grafted on fresh, native roots; it reflected the dissatisfaction of its supporters with the economic, social, and political organization of the Empire. As usual, the leaders included some idealists, but the rank and file was mainly made up of poor peasants, labourers, and outlaws. (R. Lopez.)
4. The triumphant aspect of Christianity was stressed in the cult of warrior saints (St George, a Christianized reincarnation of a pagan heroic type, was only the most famous representative of a large series), and later, in the legendary exploits of saints dueling with devils over the fate of a soul or the preservation of a threatened community. The superior power of Christ also served to point out the helplessness of pagan idols: thus, according to the Russian Primary Chronicle, when Vladimir ordered his people to be baptized, he first directed that the statue of Perun be dragged to the river, and beaten with sticks. (R. Lopez.)

5. Of course, the statement can be reversed, and it can be maintained, that the greater status of Western women after 1000 lifted the Virgin to a higher position than she had held before. (R. Lopez.)
6. *philosophia ancilla theologiae.*
7. See pages 467 ff.
8. Faith seeking to understand—or, as Anselm expressed it: 'I believe in order that I may understand.'
9. Exodus III, 14.
10. That is, the seeds of the future beings.
11. This is St Augustine's word, meaning that, by the very same act, God created man and the moral law in him.
12. See above, Part I, Chapter I, p. 76.
13. See above, Part I, Chapter III.
14. See Luigi Paret *et al.*, *History of Mankind: Cultural and Scientific Development*, Volume II, *The Ancient World* (London and New York, 1965), Part III, Chapter XVI, pp. 788–92.
15. A moral foundation, however, already existed in the pre-Christian, Roman legal tradition; civil law was imbedded in natural law, and their connection with morality is proclaimed at the very beginning of the *Corpus Juris* in such statements as 'The rules of law are to live honestly, to harm no man, and to give each his due' (R. Lopez.)
16. See Vol. II, p. 792.

SECTION 3

SCIENTIFIC THOUGHT;
LITERARY & ARTISTIC
EXPRESSION

CHAPTER XII

THE DEVELOPMENT OF SCIENTIFIC THOUGHT

I. THE FAR EAST

In China, scientific thought was the work of scholars, and while it is possible to contest the existence of the concept of strict proof and of a properly developed formula logic, we at least have to recognize the Chinese aptitude for observation, classification and concatenation. One of the first expressions of the idea of scientific observation appeared in the work of Ssu-ma Ch'ien (cf. *History of Mankind*, Vol. II, p. 557), who was the first to lay down in rational terms the deeds and exploits of his compatriots. But for a long time afterwards histories written by officials for officials remained enclosed in the traditional watertight compartments of subjects and in the chronological division by dynasties, which cut across any deduction effect from cause. It remained to Liu Chih-chi (661–721) to react by writing a general history (*Shih-t'ung*) which was undoubtedly the first example of a critical historiography. Nearly four centuries later, Seu-ma-kuang (1019–86) was able really to establish historical criticism with his *Complete Mirror for Help in Governing* (*Tzu chih t'ung chien*). The turning point had been reached, and it only remained to Ma Tuan-lin (1250–1325) to seize on a general principle providing a link of continuity between facts. He was a pioneer in recognizing the superiority of institutional history over that of events.

A. The Exact Sciences in the Chinese World

At first, science in China developed under the influence of the Taoists, and shortly afterwards under that of the administrators, who asked the scientists to provide them with means of governing; for as far back as the eleventh century Chen Ming-ta (1032–83) criticized the Buddhists for their lack of interest in things of this world. 'When they try to understand only what is lofty without studying what is lowly, how can they have a proper understanding of what is lofty?' This concern remained one of the dominating features of all Chinese sciences.

We know something of the activities of Chinese mathematicians from treatises, quotations, and the commentaries of disciples and successors. After the brilliant period of the Han dynasty, there was no radical change during the epoch of the Six Dynasties. During the eighth century, the presence of Indian mathematicians at the court gave an indisputable impulse to the renewal of mathematical studies. Since Europe at that time had lost the heritage

of the Greek mathematicians, only the Indians could compete with China in this field. But it was only from 1200 onwards that the greatest of the Chinese mathematicians came to light, accompanying the great movement of neo-Confucianism.

Nevertheless, from the fourth to the twelfth century China experienced improvements impregnated with the mathematical tradition of the Han dynasty. The Arithmetical Manual of the teacher Sun (*Sun tzu suan ching*), probably composed at the beginning of the fourth century, provides the first example of indeterminate equations and thus precedes the research of the Indians Aryabhata (fl. 476–510) and Brahmagupta (fl. 598–628); incidentally, it recalls in a strange way the work of Diophantes (fl. 325–410). The 'Text Book of Calculations (*Chang Ch'in-chien suan ching*)' by Chang Ch'in chien (fl. 468–86) with a commentary by Chen Luan (fl. 560–80) deals with arithmetical progressions, but also, above all, with fractions. It contains an explanation of the method of dividing by fractions by inverting the divisor and multiplying by it, as we do today. This method was later used by the Indian Mahavira in the ninth century and by the European Stifel, but not until 1644. The most important work of the period was undoubtedly the *Chui shu* by Tzu Ch'ung shih (c. 430–501); although the bulk of this work has been lost, a certain number of extracts remain, for it contained a calculation of the value of π to a high degree of accuracy giving the upper and lower values as 3.1415927 and 3.1415926 respectively. The son of the author, Tzu Meng-chih, is also famous, for it was he who was the first to calculate the volume of the sphere.

With the T'ang dynasty there was further progress, which may have been due to the introduction of mathematics into the examination programmes. About 625 there was published the 'Text Book of Calculations' containing the old '*Ch'i ku suan ching*' by Wang Hsiao t'ung; in it, the author solved equations of the third degree. In the eighth century, the expansion of the country and the contacts with India fostered by Buddhism resulted in the arrival of Indian scholars, at the court of the T'ang monarchs, who extended the knowledge of Indian mathematics which the Chinese had had since the Sui dynasty by imparting to them the elements of trigonometry and, thanks to Gautama Siddharta (Ch'iu-tan Hai-ta), the use of the zero in his work entitled *Astronomy of the K'ai-yuan Period* (*K'ai-yuan chan king*); however, the generalization of the zero in China came later. Decimal notation was generalized; whereas in the fifth century lengths were expressed in various terms such as feet, spans, etc., as from 660 these were replaced by series of units and tenths. At the end of the seventh century, Han Yen completed the transcription of the system by using the word '*touan*' (interruption) to separate decimals.

Either through lack of documentation or fortuitous eclipse owing to the greater importance attached to astronomy by the neo-Confucianists, mathematics did not make any great progress before 1200. But then four great figures, who are among the most important in the entire history of civilizations, dominated the thirteenth century: Ch'iu Chin-shao, Li Yeh, Yang Hui and

Chu Shih-chieh. The first, in his work entitled *Nine Chapters of a Treatise on Calculations* (*Shu shu chin chang*, 1247) developed indeterminate equations, provided the solution to equations of the tenth degree and tackled problems of arithmetical progression. Li Yeh, with his *Sea Mirror of Circle Measurement* (*Tzo yuan hai ching*, 1248) and his *New Steps in Computation* (*Ku yen tuan*, 1259), studied the properties of circles inscribed in a triangle and devised new solutions for equations; these he assembled in tables which still used the counters of former days but assigned them to fixed places, thus facilitating the reading of the formula. Yang Hui devoted himself to the sums of various series and to geometrical proofs. His *Detailed Analysis of Mathematical Rules in Nine Chapters and their Classification* (*Hsiang ch'ieh chang suan fa tsuan lei*, 1261) dealt with series of the squares of whole numbers and equations with five unknowns. Lastly, Chu Shih-chieh preceded Peter Apianus (1501–52) by a long way in his study of the coefficients of powers of a binomial and was even more premature in presenting Pascal's triangle. It was from his works, the *Introduction to Mathematical Studies* (*Suan Hsueh ch'i meng*, 1299) and the *Precious Mirror of Four Elements* (*Ssu yuan yu chien*, 1303) that, in the following century, the Japanese gleaned the initial elements of their algebra (cf. *History of Mankind*, Vol. IV, Ch. XIV).

The concern of the Mongols for improving their calendar favoured the preponderance of Arab mathematicians at the court of the Yuans. But Chinese mathematicians nevertheless take a certain amount of credit for it; thus, the calendar drawn up in 1267 by the illustrious Persian Jamal al-Din (Cha-ma-lu-ting) was replaced in 1281 by the one drawn up by the Chinese Kuo Cheuk-king (1231–1316) famous for his method concerning finite differences. This last example illustrates the close relation between astronomers and mathematicians. They dealt with both subjects, and more than one astronomer is known for his work in mathematics, and vice versa, such as Yi-hing, the most famous scientist of the eighth century, whose work, unfortunately, has been lost.

Astronomy

The Astronomy Office recorded, as in the past, all celestial positions and changes, thus accumulating a valuable mine of statistical information. One of the chief duties of this office was to draw up the astronomical tables necessary for the establishment of calendars, for the calendar was the traditional symbol of the political unity of the countries making up the Empire and was considered as a guarantee of proper government. In the fifth century Chao Fei substituted for the old cycle of Meton one which distributed 221 intercalary months over a period of 600 years. This work was improved on by Ho Ch'ieng-t'ien, who in 443 proposed fixing the first moon in accordance with the true Syzygy (*ting-shuo-fa*)—a rule which the great astronomer Liu Chao had adopted under the T'ang dynasty. Three Indian families—the Chu-mo-lo (Kumara), the Ch'iu-t'an (Gautama) and the Chia-yeh (Kaa-yapa) then played a preponderant part at the Astronomy Office (*T'ien-men-ko*). They made up for

their sometimes almost dictatorial attitude by imparting to China a wealth of notions which were foreign to her. Thus, in the eighth century, Gautama Siddharta (Ch'iu-t'an Hai-ta) translated an Indian text inspired from the Greek, the *Treatise on the Nine Planets* or *Navagraha* (Chiu chih). He also assembled all the old texts which were best known in his period and reproduced them in a *Treatise on the Astrology of the K'ai-yuan Era*, 713-42 (K'ai-yuan chan ching, 729). In 759 another Indian, Amoghavajra (P'u-l'ung) translated an important treatise on the lunar mansions and the planets (*Hsiu yao ching*), which imparted to the Chinese astronomic vocabulary a number of Persian and Sogdian terms. It remains a matter for astonishment that, when all is said and done, this Indian presence left no greater impression on the Chinese astronomers, who, just like the mathematicians who continued for four centuries to ignore trigonometry and the zero, paid no attention to the wealth which was offered them: Indian divisions of the circle, the Iranian system of seven days and features of the Greek zodiac.

Many texts, both astronomical and mathematical, were brought out under the Sung dynasty. The Astronomy Office soon had 2,561 scrolls, while as far back as 1150 a private individual had 369 works. Today, alas, they are nearly all lost. The Sung emperors used no less than nineteen astronomical tables in three centuries. In the eleventh century, Liu Hsi-su established valuable chronological tables (*Ch'ang-shu*). But the most important contributions would appear to be those of Su Sung (1020-1101) and Shen Kua (1031-95). The latter, of whom we shall have more to say, proposed in vain the use of the solar calendar, which was only accepted in 1912. He made a very accurate armillary sphere which, however, was inferior to Su Sung's machine. (Pl. 25 a.) Su Sung, in his *New Design for an Armillary Clock* (*Hsin yi hsiang fa yao*), not only describes the astronomical clock with escapement invented by the monk Yi-hsing (cf. Ch. I) but also suggests improved celestial globes accompanied by maps based on a cylindrical projection foreshadowing that of Mercator in the sixteenth century. Right at the beginning of the Yuan dynasty, in the thirteenth century, the scholar Kuo Sheu-king (1231-1316) drew up a list of Chinese astronomical instruments. Some of these, such as a device derived from the torquetum known to the Arabs, are still to be found in Nankin. As we have seen, the Arabs were then present at the court, which entrusted them with a special astronomical service for several years.

For a long time the Chinese had been interested in meteorology. As from the ninth century they were capable of drawing up tide tables taking into account differences in local time; regular recordings of rainfall and temperature became, under the Sung dynasty, a daily matter during the winter season. Meteorological forecasts were considered so important that they were the subject of twenty-three works, according to a list dated 1150. Earthquakes, too, were carefully recorded, but the Han seismograph, which was still used in the sixth century, was no longer known under the T'ang dynasty, and the texts which mentioned it were no longer understood.

Physics

Just as, so far as mathematics were concerned, the Chinese preferred algebra to geometry, in physics they showed a more marked predilection for the undulatory phenomena than for the system of particles. The magnetism illustrated by the compass (cf. Ch. I) was the subject of special study, and by the time of the T'ang dynasty polar declination had been determined; in addition, it was known that magnets could be made, not only by rubbing the needle but by allowing it to cool in the magnetic axis. In optics, according to the *Book of Changes* attributed to the magician T'an Ch'i's (*Houa shu*, 940) the Chinese already had four lenses and knew about the camera obscura in 840. In 1117 they had both sun glasses, for dissimulating the reactions of judges, and magnifying glasses. In acoustics, research into the nature of sound, undertaken as from the time of the T'ang dynasty, led T'ung hsu to affirm that, if sound existed, one was only aware of it because it led to a reaction on the part of a sensitive person. In the eleventh century Chang Tsai used the analogy of friction to explain the formation of sound. As from that time therefore they had an intuition of the nature of such phenomena, but only noted the classifying distinctions without analysing the constituent elements.

B. Sciences of the Earth

While the distinction between the science of the heavens and mathematics remained vague for a long time, the same was also true in regard to the concepts of History and the Sciences of the Earth. We have several times had occasion to mention the importance of historical methods in China and the part played by dynastic histories as instruments of reference and government. The entire scientific thinking which had the earth as its subject was also, as knowledge which could contribute to good administration, recorded by the historians in general histories, monograms or encyclopaedias. But in addition a considerable number of essays, written by scholars, dealt with things of this world. Thus, Shen Kua, whom we have already mentioned—an extremely cultured writer who might even be called the Asian equivalent of the European Leibnitz—wrote his *Dream Pool Essays* (*Mong ch'i pi t'an*, c. 1090), which have recently been rescued from an unmerited obscurity. Shen Kua was interested in everything. The extent of his knowledge appears from an analysis of the contents of his masterpiece (cf. Needham, Vol. I, p. 136) and his universal curiosity becomes apparent in a small work entitled *What You Must Not Forget to Take* which he also wrote. This consists of advice on how to travel: how to pack luggage, select a waterproof, prepare a pocket medical kit, a set of chessmen, cooking utensils, books . . . and insecticides to preserve them! His encyclopaedic work is a precious collection, for he tackles in it all the subjects included in the present chapter and many of those included in the pages devoted to techniques (Ch. I).

A great deal of Chinese literature is devoted to these subjects, from the

making of maps to descriptions of distant countries, including hydrographical observations and local topographies. In spite of the traditional cosmogonic view according to which the sky was round and the earth square, the geographers admitted that the earth was placed in the universe like the yolk in its shell. Descriptions of the various countries throughout the world were based on the accounts of travellers. The T'angs maintained the tradition of interrogating foreigners about their countries and customs; certain reports were well illustrated and give us a faithful description of the tribute bearers who came from the four corners of the Empire—a subject dear to the famous painter Yen Li-pen. Experienced geographers such as Hsu Ching (c. 1124), Fan Ch'eng-ta (c. 1177), Chou Ta-kuan (c. 1297) and a contemporary, Chao tu-kua, composed remarkable accounts of voyages in the tradition of the Buddhist missionaries such as Fa-Hien in the fifth century and Hsuan-tsang in the seventh (cf. Part I, Chs II and IV). As far back as the first century there had appeared a study on the State of Yue (*Yueh chueh shu*); later, in 347, a local monogram (*fang chih*) containing a complete historical, geographical, economic and archaeological description of Ssучуон (*Hua Yang Kuo chih*) started the tradition, to be consecrated by Imperial order in 610, of drawing up reports of this sort, prefecture by prefecture, with maps and diagrams, and subjecting them to periodical revision. These vade-mecums of the perfect official, were sometimes written by teachers, such as those devoted to the capitals under the Sung dynasty. For example, a valuable work on Hangchow, *The Past as in a Mirror* (*Meng liang lu*) gives us a faithful picture of daily life at that time. The text is illustrated with drawings. The maps were the subject of much care and were considered as secret by the civil and military authorities. The old manuscript maps and relief plans made by Shen Kua have disappeared. Only the maps engraved on stone as from the twelfth century and the printed maps survived the periodical destruction of the Imperial archives. Pei Hsiu (224-71), the father of Chinese cartography and Ptolemy's junior, had many followers. The most famous was Chia Tan (730-805), the maker of a large-scale (about 1:1,000,000) map based on an orthogonal projection; the no less famous Chu ssu-pa (1273-1337) used it to establish his 'Earth Vehicles Map' (*Yu t'u*), which was the basis of Chinese cartography, was printed in 1555 and was in use up till the nineteenth century. The maps, which were astonishingly accurate, were made with the help of a graduated triangle, the baculum, which the West was to use from 1321, but which Shen Kua was already using in the eleventh century.

Taoist alchemy, which had already been the source of numerous discoveries including gunpowder (cf. Ch. I), played an important part in the development of geological, botanical and zoological research. The Chinese observer was particularly aware of the structure of rocks and mountains, to such an extent that specialists today can detect the soil structure from landscapes of painters of the Sung dynasty. According to Shen Kua, as from the eighth century, mineralogical research had made it possible to interpret exactly the nature of

fossils and the formation of flexures. A study of the grottoes led the Sung dynasty to recognize subterranean rivers and the part played by petrificative sources. Petroleum, which was identified under the Han dynasty, was used under the Sung dynasty to obtain by combustion the carbon powder used for making ink. Moreover, Shen Kua, with remarkable foreknowledge, had the idea of recommending the use of petroleum as a fuel rather than wood, so as to avoid deforestation. Lastly, the discoveries of fossils and ancient tombs provided the opportunity for founding palaeontology and archaeology. So far as mineralogy was concerned, the alchemists worked on the theory that all minerals had a common origin; it therefore seemed to be possible to create metals in the laboratory if the formation of certain rocks was accelerated. Classification was pushed to a point where, in *Reorganized Pharmacopoeia* (*Sheng lei pen ts'ao*, c. 1115), Shen-wei listed 215 different kinds of minerals, whereas the *She lao pen ts'ao* of the seventh century listed only a few. Under the T'ang dynasty there appeared a remarkable *Synonymic Dictionary of Technical Terms Connected with Minerals and Drugs* (*Shih yao Erh ya*) by Mei Piao, and the Sung dynasty in turn published numerous concise treatises. The use of this knowledge involved numerous chemical manipulations and improvements connected with the production of ammoniac salts, saltpetre, alum, and various porcelain coverings. We cannot leave the subject of mineralogy without mentioning the passion of Chinese scholars for beautiful or strange rocks (*houa che*) with which extraordinary gardens were sometimes profusely decorated.

Herbaria (*pen ts'ao*) usually formed an integral part of the treatises, which also included minerals and animals, as is shown by the *Dictionary of Stones and Plants* by Mei Piao. There were many such collections thanks to printing, and the author of the *Great Herbiary* published in the sixteenth century was able to boast of having used more than 800 older works. The little that remains today of these old collections belongs to the field of pharmacopoeia and is based on the *Herbiary of Shen-nung, Patron of Medicine* (*Shen-nung pen ts'ao ching*) compiled in the second century; this gives the properties and uses of 365 substances. This classical work was re-edited with comments by Doctor T'ao Hong-king (451-536) who, like Leonardo da Vinci, was also a mathematician, physiologist, dietician, alchemist, inventor, calligrapher and astronomer. In his *Collection of the Prescriptions of Famous Doctors* (*M'ing yi pie lu*) he added a further 365 new drugs and described for the first time aconite, camphor and rhubarb. Under the T'ang dynasty, by Imperial order as previously, the herbiaries were revised, and Li Tzi published *The T'ang Herbiary* (*T'ang pen ts'ao*) containing a further 114 new drugs. At the same time, special herbiaries like that of the South Seas (*Nan hai pen ts'ao*) studied products of foreign origin which the flourishing trade of the dynasty could procure. Some of these products, which were sent to Japan as presents, are still preserved in the treasury of the Shōsōin at Nara.

The Sung genius for classifying and innovating could not fail to affect the pharmacopoeia. In 973 there appeared a collection designed to recapitulate all

previous experience—the *Herbiary of the Kai-pao Era* (*K'ai pao pen ts'ao*), 968–75), an important work which lists 983 products and is richly illustrated. In 1057, the same work was republished under the title *Herbiary of the Kia Yeu Era, with Additions and Comments* (1056–63). A dozen treatises were published in this way during the northern Sung dynasty (tenth to twelfth century). But theoretical studies were rare and the purpose of all these works concerning the sciences of the earth remained utilitarian, whether they conformed to the requirements of the alchemist or of the doctor.

C. Medicine

Like most other branches of science, medicine was governed by an Imperial Office which was responsible for publishing and keeping up to date the various codes and treatises. In the fifth century the basic work still remained the *Nei-ching*, which explained the organic functions on the principle of *yin* and *yang* and the theory of the Five Elements (Wu hsing, cf. History of Mankind, Vol. II, p. 417). This was opposed to the *Treatise on Illness Contracted Through Cold* by Chang Chong-king, the Chinese Hippocrates (about 168), who considered illnesses as being derived, according to the degree of febrility, from each of the signs Yin and Yang. At the epoch of the Six Dynasties treatises on acupuncture and moxa cauterization were very widespread. Medical knowledge was probably well developed at that time, but we can only presume this by judging from the progress achieved under the Sui and T'ang dynasties.

At the end of the sixth century, to mark the reunification of the Empire, all the old medical texts and the entire sum of known experience were assembled in *The Classified Prescriptions of the Four Seas* (*Ssu hei chu fang*), the 2,600 scrolls of which constituted at the time the most extensive treatise in the world. In it, we sense all the influence of Indian medicine, whose theory of the four elements (air, water, earth and fire) had been conveyed by Buddhism. To judge by the *Treatise on the Causes and Symptoms of Illnesses* (*Ch'ao-she ping yuan*) compiled by Imperial order in 610 by Chao Yuan-fang, clinical knowledge had been extended. Here we find the first descriptions of smallpox, scarlet fever, bubonic plague, bacillary and amoebic dysentery and exact details defining cholera, rickets and pulmonary tuberculosis. The problem of medical ethics was of considerable concern for doctors, and Sun Ssu mo (601–82), to whom we are indebted for the use of calomel for venereal diseases and the first treatise on ophthalmology, among other innovations, considered that human life was beyond all price, even expressed in gold; he even entitled one of his dietetic works: *Recipes of the Ten Thousand Pieces of Gold*.

The T'ang works were the subject of abundant commentaries under the Sung dynasty, but the latter, in the twelfth century, also took the trouble to prepare, in addition to the major basic works, a sort of manual for the use of country doctors (*Ho chi chu fang*). Under the effect of the spread of education, specializations such as gynaecology and paediatrics, began to appear while

progress in anatomy during the thirteenth century encouraged Sun-tzu (fl. 1247) to compile the first treatise on legal medicine (*Si yuan lu*). Social hygiene and preventative medicine took the first step forward with oral vaccination by means of human virus and the simple diets laid down by Han Tzu-hsun (1314–30) for treating certain illnesses. As from the fifth century, brushing the teeth in the morning and after meals was also recommended; in the eleventh century there were added a tooth paste on a saponin gleditsia base and the use of a brush recommended by the specialists of the barbaric Liao dynasty.

After having been subjected to Indian influence, Chinese medicine, under the influence of the neo-Confucianists, reverted to the principles of the scientists of the Han dynasty, involving such conceptions as the cycle and circulation and attaching considerable importance to properly balanced breathing and blood circulation and disinfection for any surgical operation.

Chinese scientific thinking seems to have followed the Chinese taste for human and social matters and its aversion to abstract speculation; and yet mathematical research achieved results which were comparable with, and sometimes superior to, those in other regions of the world. This absence of abstraction is undoubtedly explained by external elements which, as we shall see in the conclusion, did not allow of that ultimate fruition which is essential to any truly scientific thinking.

2. INDIAN SCIENCE

It is strange that the effort of systematization to which the Indians applied themselves in so many fields is not reflected in a classification of the sciences. In reality, Indian scientists concentrated almost exclusively on astronomy and mathematics on the one hand, and medicine and related subjects on the other. Chemistry, botany, and zoology were linked directly with medicine and pharmacy.

In physics, the study of vibrating strings and harmonics was touched upon in musical treatises. The nature of matter was examined by two 'systems' (*darsana*, or point of view): the *Sāṅkhya* and the *Vaiśeṣika*. The latter system in particular developed an interesting atomic theory.

Mention should also be made of the study of precious stones, a minor science in itself. A chapter of the voluminous work by the astronomer Varāhamihira, entitled *Bṛhat-saṁhitā*, is devoted to this subject.

This astrological work by an author who was also concerned with scientific astronomy is worth mentioning for the variety of subjects which it covers. The author naturally describes planetary influences and the portents to be deduced from meteorological phenomena and the movement of heavenly bodies. But the book also contains a geography of India, economic considerations on the rise and fall of prices, remarks on the art of love, and information on architecture, sculpture, irrigation and public works. It is not possible here to deal with

all these subjects, but it is at least worth noting that works have been devoted to them.

A. Mathematics

The science of mathematics was most often put over in India as an offshoot of astronomy, and the names of the great mathematicians are those of the great astronomers. But the Indians none the less concerned themselves with the science of mathematics for purely speculative ends, and they made tremendous progress in the most abstract branches of the subject.

Āryabhaṭa, born in 476, wrote his treatise at the age of twenty-five. He tells us how mathematics stood at the end of the Gupta era. His treatise on astronomy includes a chapter devoted to arithmetic, algebra and the rudiments of trigonometry. He wrote in verse, which imposed an extreme concision. As an example of his style, we may quote the rules for extracting square and cube roots. Here is the rule for extracting a cube root, as set forth in a stanza equivalent of two of our own verses: ‘Divide the second “non-cubic (group)” by the triple square of the root of the “cubic (group)” (which precedes). The square (of the quotient) multiplied by three times the first (number obtained) is to be subtracted from the first (“non-cubic group”), and the cube (of the quotient of the above division is to be subtracted) from the “cubic (group)”.’

It was essential to mention these rules right at the start, because they supposed that the number was written in decimal notation, due significance being attached to the position of the zero and the decimal point. And the use of positional notation conditions all subsequent progress in mathematics. This fundamental discovery was given to the world by the Indians, but it is not known at what date, as has been mentioned in the previous volume. It has been presumed that the principle of positional notation could have come to us from Babylon, but we should not reject the hypothesis that it may have been re-invented. The idea of such a system might occur naturally to anyone who is accustomed to juggling, as the Indians were, with powers of 10. Āryabhaṭa himself invented a system in which powers of 10 up to 10^{10} are indicated by a single sign. The technique of calculation using counting frames or abaci may also have favoured this discovery. This rudimentary aid to calculation, which is still widespread throughout the whole of South-east Asia, doubtless dates back a very long time.

In arithmetic, the rule of three was known, and compound rules of three were called the rule of five, the rule of seven, etc. The calculation of interest was one of the practical concerns of Indian mathematicians. Āryabhaṭa provides numerous examples of this: ‘Multiply the sum of the interest on the capital and the interest (on the interest) by the time and by the capital; add (to the result) the square of half the capital; extract the (square) root, deduct one half of the capital and divide (the remainder) by the time. This gives the interest on the capital itself.’

Not content with giving the formula for arithmetical progression, he knew how to calculate the number of balls in a pile, $P = \frac{n(n+1)(n+2)}{6}$, and

how to convert it into $\frac{(n+1)^3 - (n+1)}{6}$. He also knew the sum of the squares and cubes of the first n numbers ('The square of the sum is the sum of the cubes.'

Algebraic knowledge was very advanced. Āryabhaṭa solved equations of the second degree and even concerned himself with problems of indeterminate analysis. He applied the method of continuous fractions to a system of indeterminate equations of the first degree.

In geometry, he gave the value 3.1416 for π : 'Add 4 to 100, multiply by 8, then add 62,000. This gives approximately the circumference of a circle whose diameter is 20,000.' This value was given by the Arab mathematician Al Kharizmi as the value adopted by Indian mathematicians. Subsequently, other mathematicians indicated approximate values of π suitable for simplifying calculations (Brahmagupta, $\sqrt{10}$ and Bhāskara, $22/7$).

On the other hand, several of the formulae he proposed for the calculation of volume are erroneous, in particular the formula for the volume of a sphere: 'Half the total circumference multiplied by half the diameter is the area of a circle. This (area) multiplied by its own (square) root gives the exact volume of a sphere.' This would mean that $\sqrt{\pi}$ would have to equal $4/3$, but this error is at least interesting in that it proves that Āryabhaṭa's knowledge was independent of that of Archimedes.

Āryabhaṭa took an interest in the geometry of the circle. He knew that the side of a hexagon inscribed in a circle is equal to the radius. The statement of this theorem is worth quoting, for it is more direct than its present-day expression: 'In the circle, the product of the two versed sines is the square of the half-chord common to the two arcs' (the perpendicular dropped from a point on the circumference of a circle to a diameter is the geometrical mean between the two segments which it determines on that diameter).

The discovery of the sine, and parallel with it the cosine and the versed sine, also seems to be of Indian origin. It appeared simultaneously in the *Sūryasiddhānta*, and in the works of Āryabhaṭa, who gave a table of sine differences 225 minutes by 225 minutes ($1/24$ of a quadrant or $\pi/48$ radians), using the formula

$$\Delta n + 1 = \Delta n - \frac{Sn}{S_1}$$

Such was the state of Indian mathematics in the early years of the sixth century. The leading scientists who carried on Āryabhaṭa's work were Brahmagupta, born in 598, who was mainly an algebraist; Mahāvīrāchārya, in the ninth century, who did not neglect geometrical problems; and Bhāskara, born in 1114, who marks the peak of the development of Indian mathematics. The anonymous manuscript of Bakhshālī should not be omitted; it contains practical

examples of calculations involving decimal numbers and negative numbers. Its date, which is supported by paleographic arguments, is still the subject of controversy; some believe it to be the second or third century, others attribute a much more recent date. (J. Filliozat.)

The algebra of Brahmagupta carried that of Āryabhaṭa a stage further. It touched upon the resolution of indeterminate equations of the second degree. The unknown was called the *varṇa*, which meant colour, and also letter; it is very probable that in working out problems the unknowns were already represented by letters. In geometry, Brahmagupta concerned himself with the quadrilaterals inscribed in a circle. He stated Ptolemy's theorem (the product of the diagonals is the sum of the products of the opposite sides taken two by two), and knew that the area was the square root of the product of the differences between the perimeter and each of the sides.

The Jain Mahāvīrāchārya, who lived under King Rāshtrakūṭa Nripatunga, wrote a relatively comprehensive treatise in verse covering the calculation of areas, volumes, and projections. He studied geometric progressions and defined the ellipse, but in the latter case his formulae were erroneous. He went to great pains to state his problems in poetic form. Here is a typical example of a statement in the Indian style:

'In the pure and restful forest, full of many kinds of trees whose branches bow (under the weight) of flowers and fruits—apple trees, limes, plantains, areca palms, jack trees, date palms, *hintāla*, *pumāga*, mangoes—where the sky is filled with the varied calls of parrots and cuckoos beside lakes where bees buzz around the lotus, some tired travellers enter there gladly. There were sixty-three (equal) heaps of bananas placed together with seven of these same (fruits): (they were distributed equally) among the twenty-three travellers, and there were none left over. Tell me what is the (numerical) size of one of the piles?'

Bhāskara preceded his treatise on astronomy by two chapters, one on arithmetic and the other on algebra, which marked a considerable step forward. Brahmagupta had already given the results of operations involving zero, but he was ignorant of the indeterminate form o/o (for him, o divided by o gave o), and of the division by o . On the other hand, here is how Bhāskara expressed himself: 'The quantity which results from the division by o remains unchanged, whatever is added or subtracted from it; just as God, infinite and immutable, is permanent when worlds are created or destroyed, although many orders of beings may be absorbed or produced.' There could be no better way of defining the concept of the infinitely great. This mathematician of genius also stated Fermat's theorem, in the special case of an equation of the third degree: it is impossible to solve the equation $x^3 + y^3 = z^3$ in terms of whole numbers.

He developed the so-called retrogressive method of calculation. He provided the solution to the problem of two planets (or, more generally, two bodies moving at a uniform speed): 'Divide the distance between them by the sum of

the two speeds when they are moving in opposite directions, and by the difference in the two speeds when they are moving in the same direction. The two quotients give the past and future moments at which the two moving bodies meet each other.' He dealt with certain problems of combinative analysis, and—even more extraordinary for his time—he broke down a complex movement into infinitesimal movements (which he called instantaneous movements) which could be considered as uniform. In other words, he discovered the principle of the differential calculus in connection with a kinetic application.

So we see that the Indians showed themselves to be brilliant mathematicians, and in particular they accomplished substantial progress in algebra and trigonometry. Arab scientists recognized their debt to the Indians, and through them European science was able to benefit from the discoveries of Indian mathematicians.

B. Astronomy

The fundamental texts of Indian astronomy at the end of the Gupta era were the five *Siddhānta*, and especially the *Sūryasiddhānta*, which combined cosmography and astronomy with cosmogony, and presented a synthesis of Indian astronomical knowledge, of both Vedic and Graeco-Roman origin. As is well known, the Greek and Roman influence in this field was important.

The *Sūryasiddhānta* gave rules designed to explain and predict the movement of celestial bodies, making use of the theory of the *Nakshatra*, derived from Vedic conceptions but which is also encountered in China and among the Arabs. The principle of this theory consists of localizing the movements of celestial bodies by dividing the ecliptic into twenty-eight 'mansions' defined by neighbouring constellations.

The *Sūryasiddhānta* set forth a theory of the libration of the equinoxes. At the time of the *Sūryasiddhānta*, the spring equinox did not occur at the point indicated by older observations. An oscillation of 27° on either side of the same mean point was admitted, the annual progression being fifty-four seconds, which in accordance with Indian beliefs assigned a privileged rôle to the numbers 27 and 108.

The *Sūryasiddhānta* also developed a system of cosmic cycles, or *Yuga*. Astronomic observations showed that there exist periodic movements of different periods; the theory of *Yuga* was based on the hypothesis that the map of the skies would return to its initial state. This search for a smallest common multiple led to results which were all the more staggering in proportion as the number of observations involved was greater. The way was open to the Vedic era, and Mesopotamian astronomers had already made similar calculations. According to the *Siddhānta*, the quadruple cycle lasted 4,320,000 years, or 12,000 'divine years' of 360 'divine days'. We know that the four *Yuga* corresponded, in theories which had nothing to do with astronomy, to a regression of the cosmic, social and moral order, and that we belong to the least favoured phase, the *Kaliyuga*.

In the field of instrumentation, this work describes the gnomon, the graduated circle, the hollow hemisphere and the armillary sphere, whose construction is as follows:

'Then the Master . . . in order to instruct his disciple, will apply himself to the wonderful construction of the terrestrial and celestial sphere. He will make a terrestrial globe of wood of the desired (dimension), with a stick passing through its centre and projecting on either side to (represent) the Meru; a pair of supporting rings, and an equatorial ring. These three (rings) will carry graduated divisions to (note) the degrees of the zodiacal cycle. Then three other rings will be made with the diurnal arcs adapted to the measurement (of the preceding rings) and with the degrees of declination and latitude graduated from south to north at their respective distances of declination in accordance with the Ram, etc. These same (rings) will also be valid, conversely, for Cancer etc.; similarly there will be three of them for the Balance etc., which will be valid conversely for Capricorn, etc., and which, situated in the southern hemisphere, will be fixed onto supporting rings. The (rings) of the asterisms situated in the southern and northern hemispheres will also be made . . . the equatorial circle lies in the centre of them. Above the points of intersection of this (ring) and the two supporting rings are the two solstices and the two equinoxes. Starting from the point of the equinox, the areas of the Ram etc. are fixed by means of transverse chords, with the degrees exactly (noted), in conformance with (the dimensions) of the zodiacal cycle. Another transverse ring, from solstice to solstice, called (the ring) of declination, is also provided. It is this ring which marks the constant revolution of the sun which lights (the world).'

This apparatus was then set in movement by means of a water machine.

The first astronomer of the early Middle Ages was Āryabhaṭa, who wrote an extremely concise résumé of mathematics and astronomy from which the mathematical results quoted above are taken. Āryabhaṭa succeeded, in a very restricted space, in giving an enumeration of the most important astronomical numbers, a section on the determination of time and another on the terrestrial globe and the respective positions of the sun, the earth and the moon (theory of eclipses). His observations were more accurate than those of Ptolemy. He may have been the inventor of the theory of epicycles, which takes account of the retrogressive movements of the planets, and this theory may subsequently have been interpolated in the *Sūryasiddhānta*. Āryabhaṭa also claimed that the earth rotated, but he did not succeed in having this view accepted.

Later works (tenth century) have been attributed to the brilliant sixth-century astronomer, which justifies the distinction made by Al Biruni between two Āryabhaṭa's.

Varāhamihira, who died in 587, was not exclusively an astronomer; he wrote various works of general interest. He was typical of the cultivated man in classical India. In astronomy, he introduced few innovations; he contented

himself with making some corrections to the *Siddhānta*, but Varāhamihira was the greatest of Indian astrologers, and his *Brhajjātaka* is the fundamental treatise on horoscopes.

Brahmagupta, who was enthusiastically praised by Al Biruni, was responsible for little progress in astronomy, and even attempted to demonstrate that the earth was fixed, contrary to the teaching of Āryabhaṭa. Here is how he criticizes, in the name of tradition, his predecessors' theory of eclipses: 'It is not Rāhu which causes the eclipse of the moon or the sun! This is what Varāhamihira, Śrīṣena, Āryabhaṭa, Viṣṇu-chandra and others have maintained, contrary to what is universally accepted, contrary to the *Veda*, to the *Smṛti*, and to the *Samhitā*!'

In his *Golādhyāya*, Bhāskara followed the general lines of the *Sūryasiddhānta*. He gave evidence of a remarkably critical mind, discussed the opinions of his predecessors, and held a particularly high opinion of Brahmagupta. He explained the apparent movements of the planets by eccentrics and epicycles, and touched on the description of more numerous instruments than those previously mentioned by the *Sūryasiddhānta*.

C. Medicine

In the Gupta era, the classical doctrine of Indian medicine took shape. It had been set forth in the works of Suśruta and Charaka, and had been given the names *Āyurveda*, the 'knowledge of long life', or the 'science of eight branches'. The simple enumeration of these eight subdivisions of the science of medicine itself tells us a great deal about the essential preoccupations of Indian doctors. In addition to general medicine, general surgery, and child care, ophthalmology and oto-rhino-laryngology were quite highly developed. Then came toxicology; one branch was concerned with rejuvenating treatment, another with aphrodisiacs; the whole of toxicology was closely linked with demonology. Indian medicine did not neglect the maintenance of good health, that is to say hygiene, in particular dietetics (food and drink).

The *Suśrata-samhitā* and the *Charaka-samhitā*, which may date from the earliest centuries of the Christian era, were subsequently re-written, the Charaka by the Kāśmirien Dṛḍhabala, at an uncertain date (ninth century?), the Suśruta by a Nāgārjuna, dating from either the sixth or the tenth century. As they exist at present, they give us a picture of medical knowledge at the beginning of the Middle Ages.

Ayurvedic medicine accepted physiology in much the same form as it emerged from the Sāṅkhya system. The material of the body was made up of the five usual elements: ether, water, earth, fire and air; which meant that there existed in the body liquids, solids, empty spaces, internal heat, and movement, since the wind was the principle of dynamics, in physics as in physiology. The afflatis (*prāṇa*), of which there were five, were localized, and held responsible for all physiological processes. Their centre was located at the base of the

trunk. Fire came into play at a lower level of execution; an *afflatus* ensured the movement of food and fanned the fire, which itself cooked the food and ensured internal heat. It may be added that this physiology was closely linked with a science of psychology; one of the five fires created desires, another was responsible for visual perceptions.

However, more accurate knowledge, based on direct observation, was abundant. For example, the dissection of corpses was a part of anatomy and was considered an essential preparation for the practice of surgery: 'He who wishes to acquire a clear knowledge of surgery must prepare a corpse in accordance with the accepted method and examine each part of the body by means of careful dissection so as to acquire a dependable knowledge' (*Suśruta*). The preparation to which *Suśruta* referred was an immersion in running water designed to make the body easy to take apart. The circulation of the blood, rediscovered in Europe in the eighteenth century, was known to the Indians, and even the circulation of maternal blood in the embryo. But oddly enough the rôle of the lungs seems to have escaped Indian physiologists, and we are not even certain what they called the lungs.

Knowledge of embryology was also satisfactory. It is interesting to note that mention is made of notions of psychology; consciousness appeared, we are told, in the fifth month of pregnancy, and feeling in the sixth.

The study of diseases included a science of pathology, founded on the physiology outlined above, and especially the description of numerous types of affliction defined by syndromes. This was an advance on older medical science, in which isolated symptoms were considered as illnesses. Therapeutic measures were essentially simple, but a place was reserved for hygiene and dietetics.

The pharmacopoeia was important, and classified in accordance with the excipient, the method of preparation, and the method of application. Many plants used by the Indians since the days of antiquity are still in use today; for example, *Rauwolfia serpentina*, from which reserpine, a hypotensor and neuroleptic, is extracted; and chaulmoogra seeds, used in the treatment of leprosy. Preparations of mineral origin were not unknown either.

Indian surgery was quite remarkable, in respect of the equipment used and the operations which surgeons confidently performed. For instance, the suture of abdominal wounds, the operation for stone, and the embryotomy of the dead foetus. Ophthalmology was particularly highly developed, and Indian doctors operated for cataract. Cosmetic surgery on wounded soldiers or amputated patients (the nose in particular) was common; the repair of the nose by grafting is still known to surgeons today as the Indian method.

Mention must also be made of the elements of deontology contained in medical treatises. Charaka, for example, laid down that patients should be treated 'neither for money, nor for any terrestrial object'. He added 'In that respect, the vocation of the doctor stands apart from all other professions.'

The interest taken in the animal world also favoured the development of

veterinary medicine, on which several specialized treatises exist (horses, elephants).

The greatest Indian doctor of medieval times was Vāgbhaṭa, whose reputation equalled but did not surpass that of Charaka and Suśruta. Vāgbhaṭa, while borrowing a great deal from Suśruta, used other sources, and his work is seen as a synthesis of Indian medical knowledge. It is difficult to date this author, and the existence of two Vāgbhaṭa's has even been postulated. A seventh-century author, Mādhaba, quotes him, and so he could have belonged to the previous century. Many commentaries reveal the quite natural interest in medical studies, but innovations were rare. The examination of the pulse, up to then neglected, appeared before the eighth century.

Some doctors in southern India wrote in the Tamil language, but their doctrine was scarcely distinguishable, except in botanical classification, from the simple doctrine of Āyurvedic medicine from which it derived.

This Indian medical science spread beyond India. We do not know of any Javanese or Cambodian medical texts, but records provide proof of the interest which sovereigns traditionally took in this aspect of public assistance.

Medical manuscripts have been discovered in central Asia; one of them, in Sanskrit, may date from the Gupta period. Another, more recent, is bilingual, written in Sanskrit and *Kush*. The latter is part of a summary in verse intended to be learned by heart, the *Yogaśataka*, which appears to have been very widely circulated since there exists a Tibetan translation and it remained in use in Ceylon until modern times.

On the fringe of medicine, magical practices for therapeutic purposes were current in India as in all countries. The *tantra* provide numerous examples. In addition, yogic speculations on the circulation of afflati led to physiological exercises designed to treat or prevent illnesses. Yoga allows of important modifications in normal physiology; for example, certain *yogi* succeed in reducing the circulation of the blood to the point where it is impossible to detect.

The theory of retribution for acts committed, which in its strict application attributed afflictions to individual responsibility, is in apparent contradiction with the exercise of medicine. Nevertheless it led to the analysis of the psychological origin of illnesses, due to pulsions, considered to be traces of previous acts. An accelerated purging of the residue of these acts should therefore lead to cures resulting from what we should call in modern terminology psychosomatic therapeutics.

D. Chemistry

Chemistry was initially developed primarily with its medical applications in view. Drugs contributed to the maintenance and improvement of health, they could even give liberation (*moksha*), and accessorially they could confer magical powers like levitation. In other words, in India as in the West, alchemy and

chemistry were one, and the Indian alchemists, like their European opposite numbers, concerned themselves with the making of gold.

Efforts to introduce a systematic classification in the pharmacopoeia of mineral origin quickly led to a classification of substances: essential substances, i.e. those found in their natural state, metals and salts (pyrites, mica, etc.) of the first and second order.

The reactions between substances were known, but this knowledge as a whole was rendered extremely confused by the ambiguity of the word *rasa*, which meant at one and the same time essential substances, their essence, taste, and also mercury, which was known to the medical authors Suśruta and Charaka. For instance, the reaction of an acid and a base was expressed in terms of a mutual neutralization of the *rasa* of the acids and the *rasa* of the lyes. Treatises described apparatus and processes, for example the *puṭa*, consisting of heating in a closed receptacle over a fire of cow dung; this allows of the gradual oxidation of iron to produce ferrous oxide and ferric oxide.

The best known chemical text, the *Rasaratnākara*, 'a mine of jewels of essences', is attributed to the Buddhist philosopher Nāgārjuna (second century). But in its final version this text may date from the eighth century. In the Middle Ages, there were many texts on chemistry and alchemy, the most interesting of them being perhaps that by the doctor Vāgbhaṭa. The *tantra* also contain alchemic information, and associate mercury and mica respectively with Śiva and Pārvati.

In the context of several systems of thought which distinguished between two orders of truth, science, which applies to the universe of external appearances, had only a relative value. For Śaṅkara especially, all science was nescience because it was concerned with the contingent universe and made error the subject of its research.

In actual fact, this was only one opinion among others, and it did not succeed in throwing discredit upon scientific research, which enjoyed a prestige almost equal to that of philosophy. The study of Indian science, often neglected in works dealing with Indian civilization as a whole, is as essential for a knowledge of the Indian mind as that of philosophical systems.

The unity of scientific thought was opposed by the extreme diversity of philosophical speculations. More than that, cosmological and psycho-physiological theories, in particular the pneumatic conception of physiology and physics, had shaped metaphysics since the Upanishad era. They had contributed to fashioning the Indian mind, and certain common trends which give a family resemblance to systems in opposition with one another, worked out by different religions, derived from this common heritage, immune to fluctuations of opinion. The cyclic conception of time, the obsessions with large numbers linked with the notion of the power of 10, the attraction of the infinite or rather of 'nests of infinities', and consequently a keen sense of relativity which enabled India to escape up to a point human egocentrism of the species and the planet, derived more from scientific thought than from

philosophy. But these conceptions impregnated the minds of metaphysicians; they constituted the view of the world which subtended their own research. And, of course, they were very widely circulated through all the parts of Asia which were influenced by Indian civilization.

3. ARAB SCIENCE

A. The Origins and Development of Arab Science

Arab science rather than *Moslem* science is the accurate description of the body of scientific knowledge which found expression in Arabic throughout the territories ruled over by Islam. Scientific works come in many instances from men who were not Moslems; and the religious qualification often would be a false reflection of facts. Arab civilization was the product of the activity of nearly all peoples, of various confessions and races, occupying the immense area where Islam was the predominant faith. Throughout the Middle Ages Arabic was the language of intellectual progress in the Moslem world. Biruni, forcefully and with humour, proclaimed it as the true vehicle for international scientific and technological communication. In the first half of the eleventh century the mathematician Nasawi wrote a treatise on arithmetic in the Persian language which he found it convenient to translate into Arabic.

If the peoples whom the Moslems had subjected proved anxious to preserve their own cultures, the Moslems themselves were eager to absorb all they could of these cultures. As a consequence of this, and also as a result of contacts with Syriac-speaking Christians, and Persians still imbued with their ancient literature, the Arabic-speaking Moslems were able to forge rapidly ahead. In the early stages of the advance it is still difficult to make a distinction between what has been assimilated from other sources and what constitutes new departures.

The Arab conquerors were not systematic destroyers of civilizations, and to the credit of the Umayyad family must go the maintenance of educational institutions that alone explains the brilliant advances of the eighth and ninth centuries. The action of the masters of Damascus may not have been spectacular; but continuity was assured thanks to memories of teaching at the School of Edessa, which was permeated by Greek culture. The religious part of the School was transferred to Ctesiphon in 498, and then, in 762, to Baghdad. Greek works in all disciplines, with the possible exception of mathematics, were in the fifth century translated into Syriac by the Nestorians, who were conversant with Greek, Syriac, and sometimes Pahlavi. The average Moslem, moreover, had to take an early interest in elementary astronomical observation, if only to ascertain the direction of the *kiblah*.¹

The great Persian Nestorian intellectual centre was Jundishapur, in Susiana, the importance of which lay principally in a flourishing school of medicine.

This had been founded at the end of the fourth century by Shapur II for the Greek Theodorus, the author of a treatise on medicine in Pahlavi. But the great day of the institution really came with the closing of the School of Edessa, the teachers from which were welcomed by Khusrau Anushirwan. Furthermore, this monarch sent his doctor, Barzawaih, to India, whence he brought back a number of Indian works on medicine, together with the game of chess and a book of fables. Thenceforward, this school monopolized medical studies in the East, providing doctors for Sassanian Iran, the principalities of Hira and Ghassan, and even Arabia. The doctors had a hospital at their disposal, and could carry out observations and improve their methods: they used to hold congresses for the discussion of medical problems.

The School of Alexandria had remained active until 720, for the caliph Omar II established it at Antioch; and under Mutawakkil, that is, before 860, it was transferred to Harran in upper Mesopotamia.

Sergius of Reshaina, a Monophysite priest who died in 536 and had been educated at the School of Alexandria, rendered into Syriac Aristotle's philosophical works, the medical treatises of Galen, some of the writings of Porphyry, as well as treatises on agriculture. From these Syriac versions, translations were made later into Arabic.

The Syrian bishop, Severus Sebokht, in 660 issued a work in which he praised the knowledge of astronomy which the Indians possessed. He also commented on the excellence of their calculations and the nine signs which they used—the first time attention is drawn to these figures outside India. He explained how eclipses of the moon were due to the latter's passing through the shadow of the earth. Another treatise describes the astrolabe as imagined by Hipparchus, which was to serve throughout the Middle Ages to measure the distance of the stars. George, a Mesopotamian Jacobin bishop, who died in 734, wrote in Syriac a poem on the calendar.

The representation of the firmament on the ceiling of a cupola in the castle of Kusair Amra does honour to Syrian science. The ancient Arabs had been content to observe the annual rising of certain stars and the cosmic setting of the lunar mansions, cited in the Koran (X, 5), which served to delimit the agricultural seasons and enabled meteorological forecasts to be made. They had also observed the zodiacal light, which they called the false dawn.

The foundation of Baghdad, ten years after the fall of the Umayyads, was the signal for the appearance of a galaxy of scholars whose names were to go down in history, and it must perforce be assumed that they acquired their learning in the days of the Umayyad régime. The first pickaxe blows were struck at a moment of favourable conjunction of the stars, which was observed by specialists of the first order.

Fazari, collaborating with another astronomer, Ya'kub ibn Tarik, came into contact with an Indian who had brought to Iraq treatises known as the *Siddhanta*, from which came the Arabic word *Sindhind*. These, when translated, were the medium by which the Indian figures passed into Arabic, although

the use of them, to be promoted again by Khwarizmi, did not spread quickly in the eastern world.

This period, the second half of the eighth century, was the very short period during which Islam and India had direct scientific relations. Islam took over from India, in addition to the figures, astronomical and astrological data, in particular the planetary tables of Aryabhata, which were translated at the end of the eighth century by Abul-Hasan Ahwazi, in which chords are replaced by sines. This Indian scientific knowledge was set in comparison with the ancient Persian documents, the astronomical *Tables of the King*, on which were based the calendar known as the Yazdgard. In the medical field, there appeared a famous treatise on poisons. The first Barmekid vizier, Yahya, had sent an emissary to India for drugs, and to invite doctors to come to Mesopotamia, and it is stated that as a result Indian doctors arrived in Iraq.

The era of translations was likewise before the Abbasid period—not that it was an era of major activity. Masardjawaih, a Jewish doctor from Basra, is recorded as translating, from a Syriac version, at the behest of the caliph Omar II or even earlier, the Greek *Pandects* of Ahrun, a professor at the School of Alexandria during the reign of Heraclius.

It was apparently the caliph Mansūr who asked the king of the Greeks to send him works of mathematics. He received accordingly works on physics and the books of Euclid, which the astronomer Hadjdjadj ibn Matar, first of the translators of quality, did into Arabic, at the same time as he was translating Ptolemy's *Almagest*, from a Syriac version. It seems that Mahdi later obtained from the same source a treatise on falconry and works on magic and divination.

The Arabic translations, moreover, had their origin in an action of some nobility, if it is indeed the case that, as report has it, the caliph Harun al-Rashid commissioned the doctor Yahya ibn Masawaih to translate Greek manuscripts which had been brought back as booty from Moslem raids on Anatolia.

It is only right, however, that the caliph Mamun should be remembered as the godfather of the intellectual ascent of the Moslem world. An informed and eager follower of scientific research, he provided real stimulus for such work. He founded in Baghdad the Bait al-hikma, the House of Wisdom, which in a short time became a centre of activity. It was probably intended to rival the School of Jundishapur, on which it may well have been modelled. The new institution had a library which was enriched by the translations undertaken. There was also, again as at Jundishapur, an astronomical observatory, where Ahmad Nahawandi worked in the first part of the ninth century, establishing himself as the first Arabic-speaking astronomer.

While these initiatives were being taken by the sovereign, other individuals strove for distinction, and the three sons of Musa ibn Shakir spent fabulous sums on the collection of manuscripts and the assembling of translators. These Banu Musa, as they were called, were themselves also capable scholars, and

were responsible for works on mathematics and mechanics, which owe much to Hero of Alexandria. In the field of mechanics they set themselves practical problems, connected with spouting fountains, and with an apparatus for collecting pearls from the sea-bed. In geometry, where they worked without recourse to either arithmetic or algebra, they found the structure of the ellipse with a cord fixed at the two foci, and worked on the trisection of an angle. In astronomy, they made great advances, working from a private observatory built in their home in Baghdad.

Mamum was aware, then, of the value of the ancient civilization, and it was his wish to integrate it with Arab and Moslem culture. On his orders, an observatory was built at Baghdad, and astronomers measured the inclination of the ecliptic, which they found to be $23^{\circ}33'$. The caliph further ordered the measuring of two terrestrial degrees (for the more accurate calculation than hitherto of the size of the earth), and the making of a large geographical map, an experiment which was not essayed again for seven centuries.

Astronomy and mathematics forged ahead. Farghani produced an introduction to astronomy and the movements of the stars. On the procession of the equinoxes he worked from the Ptolemaic theory, modifying it on one essential point—he regarded the movement attributed by the Alexandrian astronomer to the fixed stars as a movement drawing the spheres and all the stars, fixed or otherwise. It was Farghani who first wrote a study of sun dials—*marbles*—as they are called in Arabic. Such was this astronomer's stature that his ideas were accepted and remained almost unmodified until Copernicus.

Muhammad ibn Musa Khwarizmi, from Kharezm (now Khiva), at the south of the Arab Lake, was the greatest scientist of his time, working in mathematics, geography, and astronomy. The name, Khwarizmi, was to be kept alive in the West in the word '*algorithm*', which for a long time signified arithmetic, or at any rate any process involving repeated calculation. His book on arithmetic, the Arabic text of which has been lost but which survives in a Latin version, was instrumental in introducing the Arabs, and then Europe, to the Indian numerical system. With this system he also spread the use of the zero, which derives from the Arabic *sifr*, 'void'. The earliest use of the Arabic zero was in a number indicating the year 260 (A.D. 873) in a deed written on parchment, less than twenty-five years after Khwarizmi's death. It should be recalled here that, according to the most recent studies, the zero sign is found in use from the second century B.C. in the work of Greek astronomers in their sexagesimal notation; it was, however, adapted by Indian mathematicians to decimal notation. But there is no doubt that, as far as the West was concerned, the zero was a direct importation from Arabic.

Khwarizmi's most important mathematical work is the *Kitab al-djabr* (whence comes the word 'algebra'), which is apparently an abridged version of a treatise translated from the Sanskrit under Mansûr. The work shows at all events an independence of the ideas of Diophantus, to which Arab science returned later. Khwarizmi may be regarded as the inaugurator, or at any rate the popularizer,

of algebra as a subject independent of geometry. It was not exactly algebra in the modern sense of the term, but more of an introduction to applied calculus, based on numerous detailed examples. Khwarizmi gave the value of π thus: 'If a circle has a diameter of 7, it has a circumference of 22.'

His geographical work is an adaptation of the work of Ptolemy; his maps, which were made at the command of the caliph Mamun and seen by Mas'udi in the tenth century, have not survived. It consists of a representation of Ptolemy's material in tabular form, with the interpolation of further data which was available in the Moslem period. The tables are arranged on the system of seven climates, six climates grouped around a central one; such a division was perhaps influenced by the Avestan distribution of the world into seven *kishwars*.

In the ninth century, Utarid produced a treatise on burning-glasses, and a work on the properties of precious stones.

Habash was a partisan of Indian ideas, and on them he based his astronomical tables, for which he drew also on the work of Theon of Alexandria. But his major contribution was the introduction of the concept of the tangent, instead of chords, in the solution of problems. (The tangent of the Arabic astronomers was the vertical shadow of the gnomon, and the cotangent, the horizontal.) With his work, 'trigonometrical procedures attained a hitherto unknown degree of perfection'.

The Persian, Mahani, wrote a commentary on the work of Euclid and Archimedes. It was from him that the Arab scholars received what is known as 'Mahani's Equation' for a problem set by Archimedes: 'how to cut a sphere by a plane to give two parts in a given proportion.' The equation was shortly afterwards resolved by Khazin, the famous astronomer to the Buyid court.

Kindi has been called the 'philosopher of the Arabs', but even this title is not wholly adequate, for here was a prodigious man of learning. 'Eclectic, after the fashion of the later Hellenes, he considered mathematics the foundation of all the sciences.' For him, mathematics underlay everything: a book of his is entitled *The Impossibility of an Understanding of Philosophy without Mathematics*.

Among the writings of Kindi that should be mentioned are works on tides, on the iron and steel of weapons, on the construction of sun-dials and a commentary on Hippocratic medicine. Especially important is his treatise on optics. It is based on Greek ideas on the subject, and is in fact a summarized exposition, with improvements, of the treatise of Euclid. An opuscule on the properties of compound medicines has recently been studied by L. Gauthier, who was surprised to find that it contained in embryo the principles of modern psychophysics. Speaking of medicinal doses and their effect on maladies, Kindi makes what is essentially a statement of the law of the correspondence of the geometric progression of stimuli and the arithmetical progression of sensations. Kindi was the first, too, to interest himself in the theory of music. In this field he draws a great deal on Euclid and Ptolemy, but uses an alphabetic

notation for one octave, which is an advance on Greek methods. Finally, it is worth noting that he looked with disfavour on alchemy, the procedures of which he thought were fraudulent. In a treatise directed against the artificial production of gold, he demonstrated how impossible it was for man to rival the creative force of nature.

Mention must be made here of the collaboration of the Sabaeans, who had persisted in a deep attachment to Greek culture and neo-Platonist philosophy. The Mesopotamian city of Harran served as the rallying-point for all those wishing to persist in allegiance to the pagan culture. The Abbasids showed tolerance here, for they were certainly alive to the intellectual qualities of the people concerned. And Moslem civilization in the ninth century reaped the reward of its liberalism in the work of Thabit ibn Kurra, the celebrated mathematician, astronomer, doctor, and philosopher. Thabit was responsible for a work on the system of the universe, endeavouring to find for the heavens a physical constitution which was consistent with Ptolemaic theory. A study of the precession of the equinoxes led him to postulate the 'trepidation of the fixed stars', by which he hoped to reconcile Greek and Arab observations as regards the variations of the obliquity of the ecliptic and of the precession. This hypothesis, which allowed for a kind of periodic oscillation in the equinoctial precession, was of considerable influence in the formation of several pre-Copernican cosmogonies.

Thabit translated the *Introduction to Arithmetic* of Nichomachus of Gerasa, a part of which is devoted to music. He wrote a highly valuable introduction to the *Elements of Euclid*, and advanced the theory of perfect and amicable numbers. His treatise on the conclusiveness of proof by algebraic calculation ranks him as the greatest of Arab geometers. He translated the greater part of the *Conic Sections* of Apollonius of Perga, the first four books of which Hilal Himsi had already translated. The importance of Thabit's work here becomes apparent when it is realized that the last three books are no longer extant in Greek. He was responsible further for a treatise on the Roman balance, on which is determined the special weight that should be placed on the shorter arm; and he revised the Arabic translations of Archimedes.

Kusta ibn Luka, a Melchite Greek from Baalbeck, left for the Byzantine Empire in search of scientific manuscripts. After a period in Baghdad, he settled in Armenia. Fluent in Syriac, Greek, and Arabic, he was versed in philosophy, astronomy, mathematics, medicine, logic, and natural science. In pure science, he wrote a commentary on the *Elements of Euclid*, translated the works of Diophantus, Autolycus and Aristarchus, and the *Spherics* of Theodosius. The *Mechanics* of Hero of Alexandria are known today only through his Arabic version. His works range over a prodigious field, and include a treatise on the use of a sphere on an axis, and writings on the balance, weights and measures, and burning-glasses. He also produced a treatise on the spherical astrolabe, the earliest Arabic treatment of the subject, which drew inspiration from antiquity.

Battanik, known in the Middle Ages in Europe as Albategnus, was a Sabaean who had been converted to Islam. This scholar had a clear vision of the progress of science. 'It is not impossible,' he said 'that in the course of time something may be added to his observations, as something has been added by him to those of Hipparcus and other investigators.' His astronomical tables, the fruit of personal observations made at Rakka over a period of forty years, had considerable influence on Arab astronomy, and further on the development of astronomy and trigonometry in Europe up to the early Renaissance.

According to Nallino, Battanik determined the obliquity of the ecliptic, and the length of the tropical year and the seasons. He confuted the Ptolemaic doctrine of solar immobility, demonstrating that the sun was subject to the precession of the equinoxes, and the equation of time subject in consequence to a slow variation in the apparent angular diameter of the sun, and the possibility of annular eclipses. He made his personal calculations for the geocentric distances of the planets; and rectified several estimates of the motions of the moon and the planets. Finally he refuted the trepidation hypothesis. Battanik, making use of Indian methods, introduced the sine into trigonometry; the modern word 'sine' appears for the first time in a translation of Battanik by Plato of Tivoli.

Ibrahim ibn Sinan, grandson of Thabit ibn Kurra, was a mathematician who, attacking the problem of squaring the parabola, perfected the procedure of Archimedes, devising a method which was not improved on until the advent of the integral calculus.

The great philosopher, Farabi, has a place in this account of Arab science in his capacity as a remarkable theorist of music. In the theories of the physical basis of sound the Arabs were, through his work, enabled to make some advance, notably on the question of the spherical propagation of sound.

Abd al-Rahman Sufi was the first of a line of remarkable Persian astronomers. He produced an illustrated catalogue of the fixed stars. (Pl. 25b.) Much in this catalogue derives from Ptolemy, including the number of the constellations (forty-eight), their distribution in the zodiacal band, and above and below the ecliptic, and the number of the stars described and their classification by magnitude. But the work also contains indications of new stars, and corrections of inaccuracies in the observations of the Alexandrian astronomer, making modern identifications possible.

Saghani, a Persian from Merv, was a mathematician and astronomer attached to the Buyid observatory in Baghdad. Mathematically, he followed up the work of the Banu Musa, tackling the problem of trisecting the angle, which had preoccupied the ancient Greeks. He was particularly versed in mechanics, and constructed, if he did not invent, the instruments he used for his astronomical observations.

Khujandi, of Transoxianian origin, was a scientist of high calibre, a mathematician and astronomer, in the service of the Buyids at Raiy. He determined the inclination of the ecliptic with the aid of a sextant of his own invention. He

wrote on the subject of the proposition that the sum of two cubes cannot be a cube, the famous theorem of Fermat. He was also responsible for observations on the construction of right-angled triangles with sides of whole numbers.

Ahmad Sidjzi made a special study of the problems of the intersection of conic sections and circles. He also set out the different solutions to the problem of trisecting an angle, and added a new one, by means of the hyperbola and circles. He also had a very inquiring mind. The Arab astronomers, following Ptolemy, were geocentricists, but one or two—as we shall see in considering Biruni—had contemplated the heliocentric explanation of Aristarchus; Sidjzi apparently constructed an astrolabe planned on the assumption that the earth was in motion, while the celestial universe and everything in it were immobile, save for the seven moving stars.

Karkhi, who lived in Baghdad, left two mathematical treatises. His work is of a most remarkable kind: ‘working on the same basis as Diophantus, it contains the first treatment of indeterminate equations’. This scholar was extraordinary, too, in that either he did not know of, or else he discarded, Indian numerical notation, and wrote out the names of numbers in full.

In Egypt appeared two energetic investigators. Ibn Yunus carried out his observations in the observatory built on the hill overlooking Cairo. The results were set out in the *Hakimite Tables*, which were dedicated to the Fatimid caliph, Hakim. In the trigonometry of the sphere, he was first to establish a formula, which was of great service to astronomers in this period before the discovery of logarithms, by which the complicated multiplication of trigonometric functions, expressed as sexagesimal fractions, was converted into an addition process. He displayed great skill in the solution of problems of spherical astronomy, making use of the orthogonal projection of the celestial globe on the horizon and on the meridian plane.

Ibn Haitham, known in the Middle Ages as Alhazen, was working in the same period, and at almost the same level, as Avicenna and Biruni; he holds a high place in the history of science. His most original work was a treatise on optics, which appeared timely to fill a lacuna in Arab science, which had at its disposal a translation of Euclid’s optics, and a commentary on it by the philosopher, Kindi. Ibn Haitham’s treatise had a decisive influence on European physicists. It contains the first description of the camera obscura. In general, Arab scientists had followed the example of Ptolemy, who had spoken of different spheres as devices for calculation purposes. Ibn Haitham, in his essay on the structure of the world, envisages solid transparent spheres rolling in the heavens, a conception taken up by the Kharizinian, Khiraki, and the Spaniard, Bitrudji.

Biruni was born of an Iranian family in Khwarezm. There he studied mathematics, history, and medicine. The fruit of his endeavours was an excellent and original book on the chronology of the nations, which he dedicated to the Ziyarid prince, Kabus. This brought him into contact with Avicenna, with whom he engaged in unremitting polemic. In his work Biruni surveys the

calendars of the various peoples: Persians, Greeks, Egyptians, Jews, Melkite and Nestorian Christians, Sabaeans, and the ancient Arabs. His sources were reliable; for instance, as regards the kings of Egypt, Biruni knew at least indirectly the lists of Manethon.

He was one of a group of scholars compulsorily assembled by the Ghaznavid sultan Mahmud, and went then to India, where apparently he taught Greek. The outcome of the journey was the publication of his masterly work on India. Mas'udi had known Arabic works on that country, which are now lost, but, Biruni, with his exceptional gifts as philosopher and scholar, produced a masterpiece, recalling the pertinent observations of Megasthenes. Though he had only a slight knowledge of Buddhism, he is manifestly well acquainted with the caste system and the life of the Brahmins. In his book, too, Biruni draws a series of parallels between Sufism and certain Indian systems, notably that of the philosopher Patanjali, whose aphorisms he translated into Arabic. He initiates his readers into the science of the Indians, and leads them on to an understanding of their thought, and to an assimilation of their philosophy. Biruni propounded views on the geology of the Indus valley which were well in advance of his time. He outlines a psychological theory of error, listing six causes liable to cause men to lie. Finally, the work contains descriptions of several different forms of chess, and elaborates on the moves of the different pieces. The most popular form of chess was played with dice, which allowed chance to predominate over the skill of the player. It should be mentioned, too, that Biruni initiated and studied the problem of grains of corn placed on squares of the chess-board, repeatedly doubling the number of grains on each square, a procedure related to geometric progression.

The following is worthy of record as an indication of Biruni's independence of mind: 'Rotation of the earth would in no way invalidate astronomical calculations, for all the astronomical data are as explicable in terms of the one theory as of the other. The problem is thus difficult of solution.'

He wrote about the astrolabe, the planisphere and the armillary sphere; he invented an astrolabe which he called cylindrical, but which is now referred to as orthographical. (Pl. 26.) In a work on precious stones, he gave an account of the correspondence to be found between these and the metals, and determined their specific weights.

Astrology was a younger sister of astronomy, and religious opposition failed to affect the astrologers' popularity. Although the conclusions of astrology are without scientific foundation the process by which they were arrived at was nevertheless a matter of serious calculation. Moreover, astrological theory was something which most of the great astronomers dabbled in at some time or other. For Farabi and the Brothers of Purity it was, within limits, an accredited branch of astral science. The most reserved judgment came from a twelfth-century Persian writer: 'Astrological predictions are based on a well-known technique; but it were well not to place entire confidence in them.' And again: 'Ignorance of the motions of the spheres entails ignorance as to their influence.'

The astrologers had their place at the courts of caliphs and princes. Their advice was sought when new towns were to be founded, and great importance was attached to their research on the genethliacal data of major historical personalities. The sixth century saw the translation into Pahlavi of an astrological treatise by Tencros of Babylon. An early translation into Arabic was also made of Ptolemy's *Quadripartitum*; and a commentary by Omar Tabari was forthwith ordered by the caliph Mansūr. The oldest extant Arabic translation is of a work on astrology attributed to Hermes and dated 743—less than seven years, that is, before the fall of the Umayyads. The *Book of Births* of Abu Ali Khaiyat was popular in Europe. A scholar of the standing of Abu Ma'shar (known in the West as Albumasar) went very deeply into divination, endeavouring by astrological methods to locate hidden treasure and lost objects. Whatever other results he achieved, he at any rate was accepted as the great specialist in judicial astrology. A treatise by a Mesopotamian author was translated into Hebrew by Savasorda in the first half of the twelfth century. Avicenna did not deem it a waste of his time to write a refutation of the astrologers, who based their pronouncements on hypotheses impossible to substantiate, such as 'the virtues of the planets, and the influence exerted on them by the signs of the Zodiac'. We may leave the subject finally by noting that oneiro-mancy was considered by the Arabs to be a special subject lying somewhere between astrology and the occult sciences.

B. Medicine

Medical studies soon became imperative. Ancient Arabia can hardly have been without a modicum of medical knowledge, essential to any human community, but this had barely proceeded beyond a very simple empiricism. All communities have been able to recognize certain diseases, find remedies, and advocate some system of hygiene. Indeed, pre-Islamic poetry speaks of strained broths suitable for the sick. Such popular medicine, in the hands largely of quack healers and bone-setters, has existed in all times and places. The East showed a particular addiction to magic potions.

Arab historians give considerable place to what is known as the 'Medicine of the Prophet'. The *hadīths* do in fact contain observations about the evil eye, magic, talismans, amulets, prayers, and formulas for conjuration. There are also references in them to certain therapeutic agents, the use of the cupping glass, and cauterization by fire. From other sources it is clear that lung infections were treated by ignipuncture. And there were also, apparently, specialists who replaced severed noses with gold or silver, and stopped teeth with gold (Pl. 29, a, b.)

The Pahlavi *Denkard* gives some valuable indications of the high moral standard of the medical body in Iran: and though this is a compilation of the ninth century it may be taken as a fair representation of conditions under the Sassanids. It is clear that doctors were required to hold a diploma awarded

after a stringent examination. They were certainly required to swear the famous Hippocratic oath: indeed, this was invoked implicitly in the Moslem period by the celebrated Hunain when he refused to supply poison to the caliph Mutawakkil, and it was Hunain's nephew, Hubaish, who translated the oath into Arabic. Fees were carefully prescribed; there were specialists, oculists, and veterinary surgeons. An important detail was the provision permitting doctors to pursue their researches on the bodies of condemned criminals. The means of cure were five in number: the holy word, fire, plants, the knife, and fumigation. The following is found in a diplomatic document of the end of the fourth century: 'The doctors sometimes burn and amputate limbs.'

The doctors who became deservedly famous under the first caliphs of Baghdad had studied at the School of Jundishapur. From here came the first representative of the celebrated Bakhtyashu' family, the members of which officiated medically at the Abbasid court for over 250 years. From the biography of one of them it is clear that the examination of urine was a current procedure.

It is scarcely creditable that the Umayyad caliph, Walid I, was the first to organize leper-houses, but to him may be attributed the establishment of the first hospital for lepers after the Arab conquest, evidence of a social concern for which he should receive full credit.

The Nestorian Christian, Yahya ibn Masawaih (known in the West as Mesua), who was medical adviser to several caliphs from Harun al-Rashid onwards, was another product of Jundishapur, who came to Baghdad to teach and direct the capital's hospital. As well as being a great translator, he was the author of numerous medical books on fevers, hygiene, and diet. His work on ophthalmology was, in fact, the first of its kind in Arabic; it was followed shortly after by another on the subject by his pupil, Hunain ibn Ishak. These studies in Arabic are the earliest extant which deal comprehensively with ophthalmology: no Greek work has survived. Yahya's book, which is based on Syriac translations of works by Hippocrates and Galen, is somewhat unmethodical, written in a partly vulgar Arabic, and interspersed with many foreign terms, in Persian, Syriac, or Greek.

The man to whom Arab science owed so much and who may be called the father of Arab medicine—Hunain ibn Ishak, a Nestorian Christian from Hira,—had travelled in the Byzantine Empire to learn Greek. With this knowledge and his knowledge of Syriac, Persian and Arabic he became a major translator, the Joannitius of Latin translations.

The caliph Mutawakkil re-formed for him the translation centre which had been established earlier by Mamun. Hunain was not only translating himself but directing a team of scholars in the work, and his zeal brought about real progress. In his *Introduction to the Aphorisms of Hippocrates*, Hunain claims to have refrained entirely from any free translation, alteration, or addition, and in cases of obscurity to have consulted several manuscripts and made extensive inquiries: to have followed the method, in fact, of the modern scholar.

To Hunain must thus go credit for a very considerable enlargement of the Arab scientific equipment. It was he who invented medical and philosophic technical terms that became standard, so powerfully helping forward the formation of a scientific language. Thanks to him and his collaborators, Arab writers represented the vanguard of culture for a century or more. It was no easy task to translate texts as difficult as those of Galen, which bristled with technical terms, and reproduce them in a language where a whole terminology had to be created.

Certain facts leave no doubt that medical science was by now fully developed. Sabur ibn Sahl, a Christian doctor and the director of the hospital of Jundishapur, was able to draw up the first Arabic codex, which served the profession through three centuries. At the same period appeared Yahya ibn Sarabiyun's *Pandects*, the Latin translations of which are countless.

Hunain was a doctor, and the first to write a treatise on ophthalmology, which was long a textbook: in it he treats of the anatomy and physiology of the eye, the causes of eye diseases, and, in a last section, there is an introductory study of symptoms.

At this juncture, too, there appeared an encyclopaedic work, Ali Tabari's *Paradise of Wisdom*, which gave an overall picture of the position of Arab men of learning. The son of a doctor of Tabaristan, Ali Tabari came to Baghdad, and eventually, at the age of seventy, was there converted to Islam. At that advanced age he produced an apologetic which was well above the ordinary. His major work is a series of observations on the most diverse subjects, the documentary sources of which are Greek and Indian. From preliminary philosophic discussions the book moves on to embryology and a consideration of the health value of different kinds of food and drink. A quick survey of the number of muscles, nerves, and veins is then followed by a review of tastes, smells, and colours, and methods of treatment based on pharmacology and toxicology. Next comes a chapter on a subject new in Arab medical literature: a study of climates, waters, and seasons in relation to health. Then comes an outline of cosmography and astronomy, followed by an essay on the utility of medicine, with a summary of Indian medicine. A final section deals with general pathology, diseases of the head, heart, and intestines, nervous diseases, and fevers. The work is in many respects ahead of its time. It is interesting to note the order of diagnostic procedure laid down: the appearance and nature of the affected part, signs of palpitation, any disturbance of function, difficulty of evacuation, possible secondary effects, and lastly, the interrogation of the patient.

The medical *Pandects* of Thabit ibn Muna had little new to add; diseases of the human body are classified 'from head to feet', a procedure which was adopted by Avicenna.

The first work on equitation, with observations on veterinary medicine, the work of Ya'kub ibn Akhi Hizam, dates from the end of the ninth century.

The tenth century was productive of many individuals of note. The first

was Razi (the Rhazes of the medieval West), a writer of rare fecundity, a disturbing thinker whose religious attitude is dealt with elsewhere, and the greatest clinician of Islam. After studying medicine in Baghdad, he went to direct and teach in the hospital of Raiy; he was recalled thence to exercise the same functions in the great hospital in Baghdad. It is clear that Razi, in diagnosing illness as well as in treating it, sought to follow the dictates of practical common sense. He left more than two hundred works: some of them, of course, only short monographs or opuscules, but others were voluminous treatises. He wrote on medicine, natural science, alchemy, mathematics, optics, astronomy, theology, and philosophy.

The *Kitab al-Hawi* was translated in the medieval period as '*liber Continens*'. It was mistaken at first, in view of its length, for an encyclopaedia prepared by Razi's disciples from his collected papers. This gigantic tome presents a résumé of Greek, Persian, Indian, and Arab medical knowledge, with an exposition of Razi's personal views appended. Its appearance is an event rare enough to merit emphasis; here is an absolutely first-rate dossier of available clinical observations, quite undogmatically assembled.

The treatise known as *Mansūri* is so called because it was dedicated to Mansūr, the Samanid prefect of Raiy. It is primarily a treatise on anatomy, each bone, muscle, or organ is described in the light of its function and purpose. It is novel, too, in another respect: the terminology throughout is Arabic; Razi several times laments the deficiencies of Arabic as a means of expression. A work of importance is his treatise on smallpox and measles, which is the oldest reliable account of these two diseases, and of which there is no Greek counterpart.

Razi also made a study of alchemy, but departed from the well-trodden path of mysticism and symbolism to give precise results of technical experiments, with a detailed description of substances and instruments. It may be said that it was he who laid the basis of scientific chemistry: certainly he struck the spark that set off a whole immense trail of literature on the natural properties of minerals, plants and animals. As the same time he was, without being a charlatan, not above subscribing to the belief of his time in the transubstantiation of metals.

To Razi, the Arab world owed its first formulation of the faith in a continuous scientific advance, with emphasis on the provisional nature of all research whose conclusions can be revised at all times.

At the Buyid court lived Ali Madjusi, of Mazdaean origin, the greatest of the doctors of the second half of the tenth century. His major work, the *Royal* consists of twenty sections, ten on the theoretical principles of medicine and ten on its practice. It was the first comprehensive and methodical presentation of medicine as a whole—something which the Greeks had not attempted. Ali Madjusi may be called the father of the medical 'intern' system, for he required that the student be present at the professor's examinations. Edward Browne has shown by an apt quotation how Ali propounded in a rudimentary

form the theory of the system of capillary vessels, a theory which was not fully formulated until a very much later date.

Teaching was now put on a stable footing, mainly through the efforts of Sinan, the son of the Sabaean Thabit ibn Kuna. Sinan was an eminently learned man, who was forced by the caliph Kahir to embrace Islam. The part he played was first and foremost that of the organizer. He cannot be regarded as an innovator, but he brought new life and order into institutions that were floundering. That there had hitherto been no medical examinations whatever is inconceivable; in addition to the barbers, who were entitled to take certain surgical measures, there may have been a corporation of some sort for health officials. But, as the result of a scandal, Sinan decided that a qualifying examination must be taken by all doctors in the capital; he also assumed supervision of the eight Baghdad hospitals. His efforts were seconded by the intelligent zeal of a wise minister, Ali ibn Isa, who had doctors attached to the prisons and organized a corps of itinerant practitioners to serve the countryside.

All the writings on *hisha*—that is, on city policing—envise the rigorous inspection of doctors, bone-setters, oculists, and veterinary surgeons. The prefect was empowered to investigate the competence of the practitioners, who were expected to know certain manuals by heart, and to demand to see their medical instruments, lists of which were given in the manuals.

Ammar ibn Ali, the most original oculist that the Arab world produced, came to settle in Egypt after having travelled in Khorasan and Palestine, where he had practised extensively. His treatise on his subject he dedicated to the caliph Hakim. If not the inventor of the resorption operation for cataract, he was responsible for perfecting the technique of this procedure—suction through a hollow needle—which Thabit ibn Kuna had considered dangerous and of doubtful efficacy.

Avicenna is dealt with elsewhere as a philosopher: he and Biruni dominate all contemporaries. His scientific work is also of considerable value, which its literary qualities served to enhance. His medical system was long-lived in both East and West. He was an infant prodigy; at eighteen he was already an excellent doctor with a reputation for his cures, and at twenty-one he began to write his books.

Avicenna's scientific writings included medical verses, mnemotechnic aids for use in teaching, a number of mathematical monographs, in which he propounded the proof by nine, and studies on the science of weights. In chemistry, he made a vigorous attack on the theory of the transmutation of metals: but, while his opinion here is evidence of his scientific attitude, it had a short life.

The real fame of this encyclopaedic man, however, rests on his medical work, the *Kanun* (Canon), a general collection of ideas, presented in a methodical and orderly manner. This systematic study supplanted the works of Razi and Madjusi in eastern minds, though one or two Arab authors continued to find Madjusi's style clearer, and Razi's book is more appreciated today because of its clinical observations. The *Kanun* truly remains the greatest Arab

medical work: it covers the general principles of medical science, simple medicaments, local diseases, and diseases not specific to any one part of the body, as, for instance, fevers, and pharmacology. It is certainly based on the works of antiquity, but Avicenna also frequently draws on the fruits of his own experience.

Pharmacopoeia had its beginnings in the school of Jundishapur. An Indian doctor had brought there the *Book of Poisons* of Shanak (perhaps, Sanakya), which was translated into Arab from a Pahlavi version, and revised. This was followed by a translation of the *Materia Medica* of Dioscurides, made by Stephen, the son of Basil, one of Hunain's team. But the Arabs had progressed well beyond their Hellenic predecessors, and the Arab list of drugs contained several hundreds of remedies unknown to the Greeks, drawn in many cases from Persia. (Pl. 28a.) Certain names of plants reached the West through the intermediary of Arabic works. (Pl. 28b.)

Dinawari might well be termed the 'father of Arab botany'. His work was, in good Arab tradition, a poetic anthology about plants, but this did not prevent it from containing serious scientific descriptions of extreme terminological precision. Medieval doctors and pharmacists had to know it by heart in order to gain the authority to practise.

Muwaffak Harawi dedicated to the Samanid prince, Mansûr I, who reigned from 961 to 967, his *Foundations of the True Knowledge of Medicaments*, the first work of its kind in Persian. There is reason then to suppose that, if the Samanid princes felt it necessary to have a text-book in Persian, oral teaching in Khurasan and Transoxiana was in Persian rather than Arabic. The archaic character is evident both in syntax and vocabulary. The great originality of the work lies in its inclusion of Indian medical knowledge. The author does not, however, altogether abandon the rules of the Greek Canon.

Masawaih was a Jacobite Christian doctor, from Mardin in Upper Mesopotamia. He lived first in Baghdad, and then came in the reign of the caliph Hakim to the Fatimid court in Cairo. He became famous, at least in the Latin West, for his pharmacopoeia, which was divided into several sections, dealing with correctives to medicines, simple purgative remedies, composite medicines and lastly medicines as intended for each of the specific individual diseases.

C. Alchemy

As far as alchemy is concerned, we may fairly safely discount the legend of the Umayyad prince Khalid ibn Yazid and the Alid imam, Dja'far Sadik. But we must note that the medieval period, in the West as well as in the Orient, was permeated by belief in the status of one Djabir (the Geber of the Latin texts), who was supposed to have lived in the eighth century. An immense body of work circulated under this writer's name, and it has taken the talents of a Paul Kraus to sort out the situation.

The so-called works of Djabir are apocryphal: Razi, who died in 925, knew

nothing of them. All the indications are that the Djabirian corpus was composed at the end of the ninth century or the beginning of the tenth. In fact, this is a vast and important body of work which goes beyond matters of alchemy and has its bearing on the history of the sciences in Islam. Alchemy bulks largest, but a great number of other subjects figure also: medicine, astrology, astronomy, magic and theurgy, mathematics, music, the various branches of philosophy, conjectures about the origin of language, the doctrine of the specific properties of things and the artificial generation of the animate—in fact, the whole range of the sciences as they had come down to Islam. Given the scarcity of information available about some of these lines of thought in antiquity, the Djabir writings make possible a reconstruction of certain interesting aspects of Greek science which had hitherto been given up as inaccessible.

The writings contain an amplification of the theory of the transmutation of metals, which holds that each of these should be reduceable to the nature of gold, since gold has a balanced nature. The procedure is at bottom comparable to that of medicine, in which a cure is sought in the restoration of the human body to its state of balance, by use of the appropriate remedies. These remedies are seen in these writings—and herein is the originality of the Djabirian alchemy—as having a counterpart in the world of metals in the elixir; and elixirs are recommended which are based on substances that may be animal or vegetable. The term, elixir, may be equated with the Western concept of the 'philosopher's stone'. At all events, the introduction of sal ammoniac into chemistry is due to the pseudo-Djabir. Alchemy had a larger quota of charlatans than astrology, for the astrologers at least based their calculations on data that were scientific. Modern chemistry nevertheless arose out of the more or less strict empiricism of the alchemists.

Another, equally intangible, personality in the field of the hermetic arts was Ibn Wahshiya, an alchemist and specialist in the occult sciences, known principally for his work, *Nabataean Agriculture*. This is a work full of agricultural information of the first interest, and containing some really quite valuable plant and animal observations which are accompanied by magical superstition and worthless inanities. The serious part of the work was something that, by the end of the ninth century, was no longer quite a novelty. A translation had been made about a hundred years before of the geoponic treatise of Anatolius, the original Greek of which has been lost; and another work of the same kind had perhaps also been translated into Arabic from a Pahlavi version, the *Geponics* of Cassianus.

D. Geography

Geography was at first based on astronomy thanks to the double impulse of the translations and the building of observatories; it depended on the mathematical principles which permitted the establishment of longitude and lati-

tude. The middle years of the ninth century saw the first speculative studies, which were later to be confirmed by observed facts. The cartographic work under Khwarizmi's direction which was instituted at the orders of Mamun, was doubtless largely based on Greek ideas, but due account must also be taken of data showing that, under the Umayyads, a map was made of the Dailam and of the canals of Basra.

The caliph Wathik sent specialists to Ephesus to examine the cave of the Seven Sleepers, and a mission, led by the interpreter Sallam, to survey part of the Great Wall of China; their accounts were collected by the principal geographers of the ninth century. It is now known also that serious mariners' instructions were drafted in the course of this period of navigation in the southern seas. Two works provided some curious documentation of the Far East: a *Narrative*, said to be by the merchant Sulayman, about China and India, in which occurs the first mention of tea outside China, and a compilation made by Abu Zaid of Shiraf from the accounts of sailors. At the beginning of the tenth century, Ibn Fadlan, a diplomat sent by the caliph Muktadir to head a mission to the Bulgars of the Volga, set down his record of the journey: the information he gave about the peoples living on the shores of the Caspian was drawn on by later geographers. Little more than his name is known of Ibrahim ibn Ya'kub, who is assumed to have been a Jew from North Africa. He travelled across Germany and through the Slavonic countries, and it has been suggested that his wanderings may have had some connection with the mission sent by the Umayyad caliph of Cordova to King Otto the Great.

In addition to these bold travellers, who also included the little group of 'Adventurers' from Lisbon who explored the Canaries, the hundred years from 850 to 950 produced an outstanding line of authors interested in geographical matters. Route-maps were drawn up, which were in reality travellers' guides, with the names of the stages, the water-courses to be crossed, and information about supplies of drinking-water. This was descriptive geography, which perhaps had its source in the requirements of the administration, and which in turn made its contribution to the efficiency of the communication system. In fifty years, the science of longitude and latitude had receded into the background before the need to plot the positions of relay-stations.

Two writers, Istakhri and Ibn Haukal, at the end of the tenth century, worked systematically, but on a basis which followed neither the astronomical formula nor the division by climates. They met in 951 on the banks of the Indus, and Ibn Haukal clarified some of Istakhri's data, and added to them. Ibn Haukal documents the economic organization, and pronounces judgments that, if anything, gain in interest from the fact that he was a Fatimid missionary. Two new regions are brought within the ken of the reader of Arabic: the Sanhadja Empire of Ghana, in West Africa, and Sicily.

Particular mention should be made of the geographer Hamdani, whose position in Arabic literature is a special one: for his life was spent far from any of the great intellectual centres, and he scarcely stirred from the Yemen,

the little country of his birth. His description of Arabia is a fine work of descriptive geography, enumerating mountains, rivers, and towns, with accounts of agriculture and ancient monuments, and not omitting a description of the dialects. The botanic catalogue which he gives of the Peninsula comprises a great variety of plants; it also includes the various names by which they were designated.

Mukaddasi, who was born in Jerusalem, was the author of the most original and one of the most valuable bodies of work in Arabic geographical literature, remarkable for its range of observation and sure description. Here in truth is the inaugurator of the human geography of the Moslem world. Mukaddasi spent his life travelling through all the domain of Islam, with the exception of Sind and Seistan in the east, and Spain in the west. His documentation was for the most part from books, and everywhere he went he spent much time in the libraries. Thus he tells of the cartographic work he was able to examine, and makes no bones about recording the considerable discrepancies existing between the different maps. He was also an unabashed questioner of sailors and merchants. He produced a vast body of information about climate, products, trade, coinage, weights and measures, habits of life, religious beliefs, and levies and taxes in the various countries, and his work became the most important of the sources of information for the history of Eastern culture.

At the other extremity of the Moslem world, at Qairawan, there was a school of medicine functioning under the rule of the Aghlabids. This was an institution of great significance: founded and served by Jewish doctors from Mesopotamia, it heralded the important part that Jewish men of learning were to play in Spain and southern Italy.

Ishak ibn Imran came apparently to North Africa in the middle of the ninth century, and a pupil of his, Ishak Israili, was doctor to the last of the Aghlabid princes and to the first Fatimid caliph. He wrote a manual of deontology and a work on dietetics that, in a translation by Constantine the African, served as a basis of instruction at the university of Salerno. Ibn Djazzar, Ishak Israili's disciple, left a considerable body of writing, including the pandects entitled the *Traveller's Viaticum*, which were translated into Latin, Greek and Hebrew. In these treatises were studies of small pox, measles, leprosy, and the plague.

E. Arab Science in the Western Areas

The first doctors to be appreciated in Spain in the tenth century came from Mesopotamia. The famous story of a Byzantine emperor's dispatch to the Umayyad court of a text of Dioscurides' *Materia Medica* nevertheless marks a point of fruitful scientific departure. Cordova was fortunate then in having a man really of the first rank, the Jew Hasdai ibn Shaprut, an able diplomat and a sound doctor who was also the champion of Jewish intellectualism. Through him the centre of Jewish studies passed from Mesopotamia to Spain. The monk

Nicholas arrived in Cordova from Byzantium in 951 to form a team of translators.

Great doctors now emerged. Arib, a historian continuing the work of Tabari, and Recemundo's collaborator in preparing the astronomical, agricultural, and meteorological calendar of Cordova, produced a work on embryology and gynaecology. Ibn Djuldjul produced a commentary on the work of Diocleides, and actually supplemented it; he also wrote a history of medical practitioners, in which he drew on Latin sources, something rare enough to deserve mention. Abul-Kasim Zahrawi (known in the West as Abulcasis) was the Moslem world's first and greatest surgeon, at a time when surgery was an inferior activity, the concern of barbers, and when obstetrics was left entirely to the midwives. He was a skilful operator; in his long treatise he attempts to come to grips with the problems of cauterization, surgery proper, and the treatment of dislocations and fractures. He gives detailed descriptions of the various instruments and provides illustrations. It is worth noting in passing that it is in the purely literary examples of these Eastern writings that mention is made of anaesthesia. Firdusi speaks of a patient being put to sleep with wine before a Caesarean operation, and a thirteenth-century Persian essayist tells of Aristotle trepanning a patient 'to whom he had given a drug to make him unconscious'.

Spain also had great astronomers. Madjriti, the last scholar of the Caliphate of Cordova, was responsible for the popularization in the West of the *Encyclopaedia* of the Brothers of Purity, and made a considerable reputation for himself with treatises on alchemy and the occult sciences. Astronomer and mathematician, he compiled a book on commercial arithmetic.

Zarkali played a major part in the transmission of Arab science to the Christian West, which knew him as Arzachel. This scholar, who lived in Toledo in the eleventh century, published some astronomical tables, but was known principally for his invention of an astrolabe, the *safifa*, which had the advantage of being universal, as against the older form for which different tables were required if it was to be used in different latitudes.

But Spain is principally known for its botanists. Bakri made his mark as a geographer. He did lexicographical work on place-names in poetry and on the traditions of the Prophet. The extracts from a descriptive work on North Africa and Russia represent a compilation of known facts, with new contemporary discoveries added. A writer who never left the Iberian peninsula, he has been noted for 'his methodical approach, his ever alert curiosity, his attention to detail, and the serious approach to information of a wary investigator'. In view of that description, we must greatly regret the loss of his botanical work on Spanish flora, parts of which are to be found in the writings of Ghafiki and Ibn Baitar. Mention must be made of Ibn Wafid (Abenguefith to his Latin translator), the vizier and director of the botanical garden of the princely house of Toledo, the author of the earliest pharmacopoeic treatise in the Moslem West, in which he bases himself on the ancients, but takes into

account the remedies he has himself seen used to effect in Spain. In the peninsula, the height of Arab pharmacology was reached by two Jews, Ibn Djanah and Ibn Baklarish, of Saragossa, whose works, of considerable scientific substance, were also important linguistically because they gave the names of plants in several languages. The Banu Zuhr were a family of Moslem scholars of Arab origin, who distinguished themselves in Andalusia in the eleventh and twelfth centuries. The most accomplished of them was Abd al-Malik ibn Zuhr (known in Europe as Avenzoar), who was doctor to the last Almoravids and the first Almohads. This doctor, who was the friend of Averroes, is regarded as the Western rival of Razi, sharing both his moral stature and his clinical ability. 'One comes in his work on truly original studies such as those of mediastinal tumours and the pevicardiac abscess. He was the first of the Arabs to accept tracheotomy.'

Ghafiki was, according to Meyerhof, the best and most original botanist of Islam in the Middle Ages. His method was an extremely rigorous one. He cited Dioscurides and Galen in the Hunain translations. And, to these classical definitions, he joined quotations from many authors, Greek, Syrian, and Arabic, taken from more than a hundred ancient works, to establish the different forms of plants and drugs, their presence in countries unknown to the Greeks, and their curative or harmful effects. This valuable collection brings to light the existence of authors, otherwise quite unknown, whose accounts are of the greatest botanical and geographical interest. The names of plants are given in Arabic, Latin, and Berber. To the exceptionally meticulous descriptions he appended his personal observations, the fruit of botanical work in Spain and in North Africa. To him we owe our knowledge of products newly introduced into Spain and unknown to the Eastern naturalists.

Averroes is a figure of major importance in the history of philosophy, but something should also be said about his activities as a doctor; and it should not be overlooked that he engaged with his customary lucidity in studies in astronomy and physics. Averroes was doctor to the Almohad court and was the author of a medical work entitled *Kulliyat* ('Generalities') translated into Latin by a sort of pun as *Colliget*. It may be recalled that this was the title of the first book of the *Kanun* of Avicenna, which deals with anatomy, hygiene, and maladies attacking the human organism as a whole. Averroes added an account of medicines and diets. The Latin translations which were made served to establish the book as a classic. Nevertheless, the work does not bear comparison with Avicenna's *Kanun*.

Towards the end of the twelfth century, Ibn Awwam, who came from Seville, published a work on agriculture, the greater part of which dealt with plant cultivation, and four chapters with stock-rearing. The work is based on ancient sources, but draws in addition on practical knowledge. The result is an excellent botanical treatise, 'among those doing most honour to Arab science'. The new feature is that, in dealing with plants used medically or in industry, the author gives an account of their cultivation and reproduction,

diseases and remedies, and different methods of grafting. Manures, watering systems, and the seasons for ploughing and sowing are reviewed.

Surprise would be caused in some quarters were the name of Ibn Baitar to be omitted from this discussion. He was regarded by his contemporaries as the most accomplished botanist of the period; here, however, his importance must be seen in correct perspective. This Andalusian scholar was certainly far from incompetent, and due account must be taken of his many botanical journeys, across the whole of North Africa, Egypt, Syria, and Asia Minor. For these he had prepared himself by conscientious study of his predecessors, both Greek and Arabic. The fruits of his endeavours are contained in two works: a treatise on simples, in which plants are ranged alphabetically, and a practical compendium of the same plants classified under the various diseases. His encyclopedia of simples has the advantage of having survived intact, but it came too late to have any influence on medieval European science. Out of fourteen hundred remedies, some four hundred make their appearance for the first time in a pharmacological work. We must nevertheless recognize Ibn Baitar's lack of originality. He drew on the works of Dinawari and, especially, of Ghafiki, but his personal observations number, surprisingly enough, no more than forty.

To mention Idrisi and the travellers who followed him is to assert the distinction of the work in the Moslem West in geography. Idrisi, born at Ceuta, studied in Cordova; he travelled in North Africa, Asia Minor, even in France, and was called to the court of king Roger of Sicily. He laboured at the construction of a globe in silver which showed all the known towns of the world, with their longitudes and latitudes. The plane reproduction of this globe, extending over seventy maps, set end to end, gives a picture of the whole world. The text was intended as a commentary on the maps, thus constituting an astronomical geography, which was divided into climates and sections. But Idrisi went further and combined with this a descriptive geography, giving detailed itineraries and economic information. For regions which he himself had not visited he went for information to well-established sources, and where the European countries were concerned he interrogated merchants and travellers at the court of Palermo. His work was comprehensive and was the first work in Arabic to give an account of all the Christian countries. It is the most notable geographical work of the Middle Ages. Idrisi was responsible also for an important catalogue of drugs based on Dioscurides' *Materia Medica*, in which certain of the plant names are listed, with synonyms in many languages.

Abu Hamid Gharnati left Spain in 1106, and died in Damascus in 1169, after travels in North Africa, Egypt, and Iraq. His account of his journeying provides a good deal of information about the climate, the fauna and flora, and the populations of regions which were little known, or now for the first time traversed by Arabic writers; such regions, for example, as Hungary, the Caucasus, the countries round the Black Sea and the Caspian, and Khwarezm.

Ibn Djubair, a native of Granada, left a detailed account of his pilgrimage to Mecca, which is one of the most charming documents in Arab literature.

Parts of it have excellent documentary value, especially regarding the rapaciousness of the sherifs of Mecca, about which he waxes as indignant as he does enthusiastic about the just administration of the Crusaders, whom he judges with a rare impartiality.

Buni, who lived in the thirteenth century, has remained the most popular of the Arab occultists. He wrote prolifically on the cabala, divination, white magic, the making of amulets and talismans, the secret power of letters, and geomancy.

Bitrudji had been a pupil of the philosopher Ibn Tufail, and became known for his opposition to the theories of Ptolemy, on which he launched a vigorous attack. He enjoyed a great reputation among the Jews, who translated him into Hebrew and Latin (his Latin name was *Alpetragius*). He took up again, with the introduction of some modifications to them, the hypotheses put forward by Eudoxus of Cnidus concerning homocentric circles. Bitrudji's original contribution lay thus in the counterblast he introduced to prevailing trends in the astronomical thinking in his time, and in this lay his success. Jewish astronomers referred to him as 'the one who causes to vacillate'.

Marrakushi, who hailed from Morocco—a fact exceptional enough to be of note—produced in the early years of the thirteenth century the most comprehensive study of astronomical instruments and their use. A further work gives a table of latitudes and longitudes, which has the merit of greatly clarifying the picture of Africa, particularly from southern Morocco to Ghana.

F. Science in Eastern Islam

We take up again the story of eastern Islam, abandoned temporarily, for the purposes of this account, in the middle of the eleventh century. At this period the names in prominence there are those of two enemies, Ibn Ridwan, doctor to the Fatimid caliph Hakim, and the Christian Ibn Butlan, who practised in both Baghdad and Antioch; he even joined his rival for a time in Egypt the better to pursue their controversy. The point ostensibly at issue was the greater or lesser hot-bloodedness of chickens and small birds; but a more serious difference in outlook divided the two scientists, who, while observing professional respect, permitted themselves the luxury of sarcasm. It was Ibn Butlan's contention that oral instruction was an essential part of medical training, while the self-taught Ibn Ridwan declared that the required knowledge could be obtained purely from books. A controversy similar to this had arisen two centuries before at the court of Baghdad. Both practitioners wrote a great deal, and mention is made here only of the works which made some original contribution. These are a study of climatology by Ibn Ridwan, and the synoptic tables of health, with which Ibn Butlan instituted a method to find favour with his contemporaries, such as the Baghdad professor, Ibn Djazla (a Christian converted to Islam), and with succeeding generations. A measure of the quality of Ibn Butlan's scientific spirit is given in this reflection

on magnetism: 'It is irksome to us to be unable to give for this phenomenon a proven explanation, although it is perceptible to the senses.'

These two exponents of free inquiry and discussion should be noted because Moslem thought was soon to be aligned by the Seljuk *madrassa* along a very much lower level; we notice, not for the first time, the 'lamentable decadence that set in culturally as a result of religious intolerance'. The change did not prevent some personalities of note from emerging, but their isolation is apparent. Science, from being the shared preoccupation of a great number of intellectuals, became, as it were, the prerogative of a special class vowed to pure erudition.

Too much attention should not be paid here to the excessive praises showered by historians on the scholars of the twelfth and thirteenth centuries. We shall pay due regard to those rare individuals of calibre who contributed to scientific advance, but we must pass over the vulgarizers, so inferior to the great figures of the ninth, tenth, and eleventh centuries.

G. Arab Science under the Turks

The first scientist to emerge after the establishment of the Turks in Iran was Khazini, a former Greek slave, whom his master had scientifically educated at Merv. Khazini drew up an astronomical table, and consigned the results of his observations to the observatory of Nishapur. His major work was a masterly treatise on the balance. This was an exceptional study of mechanics and hydrostatics, containing a table of the specific weights of solids and liquids, a table of densities, and observations on capillarity, and on the so-called 'water' balances, intended to show up their falsifications, particularly where precious stones were concerned.

The Persian poet, Omar Khayyám, who died in 1132, was the greatest man of learning of his time. He wrote in Persian his treatise on algebra, in which he demonstrated his solution of cubic and biquadratic equations by conic sections. This work, the most accomplished of the products of Eastern mathematical science, thus stamps him as the father of modern analytical geometry. Omar Khayyám also led the commission charged by order of the great Seljuk minister, Nizam al-Mulk, with the reform of the calendar, which in its new form was to be called the *djalali*, named after the title of the sovereign, Djalal aldin Malik-Shah. Without going into details, it may be noted that it was more accurate than ours, for whereas the Gregorian calendar involves an error of one day in every 3,330 years, the *djalali* error amounts to only one day in about 5,000 years.

Al-Jaziri's treatise on automata was a work that had a great success in the west, in particular because it was popular with miniaturists. It represents the most comprehensive work on the development of mechanics since the Greeks. (Pl. 27.) Mechanics was a field in which the Arabs generally 'confined themselves to accepting and commenting on the writings left them by antiquity'.

Some excellent ideas of mineralogy are to be found in the alchemists' writings, but it was not until the thirteenth century that a treatise appeared dealing exclusively with this branch of natural history. Tifashi, who died in 1253, produced a volume on precious stones, their geographical origin, description, properties, market value, and uses in medicine and even for purposes of magic. Fifty years later came another study, but the Egyptian author Bailak, which has what now seems the great merit of containing the first mention in a work of this kind of the magnetic needle. Bailak had seen this in use in the Sea of Syria in 1242, while Awfi had noted its functioning in the Indian Ocean ten years earlier. It should be recalled that the earliest reference of all to the magnetic needle is in a verse composition of Guyot de Provins, dating from 1190.

Undue importance should not be attached to the relations which the emperor Frederick II had with eastern men of learning. They were not responsible for any significant scientific advance, although they do testify to a desire for contact, and the respect which the West felt for Eastern achievement. Frederick II, it is well known, was intensely interested in philosophy, mathematics, and astronomy, and sent to the Egyptian sultan, Malik Kamil, with requests for answers to certain problems with which he was grappling. The names of a number of scholars have come down as a result of his request—some of them, curiously enough, those of professional jurists—but only with vague references to their vast learning, albeit unspecified. One of the problems had to do with a quadrature, that is how to construct a square of the same area as a given segment of a circle. An exception should perhaps be made of Karafi, who did solve certain problems of optics.

In the first half of the twelfth century, Djurdjani wrote, with a dedication to the Shah of Khwarezm, a very full treatise on medicine in Persian, the first of such treatises not in Arabic, which was later translated into Urdu.

The Mesopotamian doctor, Abd al-Latif, is in another category. He lived for quite a long time in Syria and Egypt, where he was in touch with Maimonides. His *Relation of Egypt* reveals the profound knowledge he had of natural history. In Cairo, he was able to examine the skeletons of mummies, and is not a little proud of being able to write from direct observation. He gained 'a knowledge of the shape of bones, their joints, their sockets, and relative proportions and positioning, that could never have been acquired from books. For,' he adds, 'there is a great difference between a description and the actual inspection of things.'

Ibn Nafis, a doctor trained in the hospital at Damascus, was appointed chief of the doctors of Cairo, where he died in the thirteenth century. An excellent philologist and an accomplished jurist, this practitioner wrote a great deal, of which, however, little is extant.

His name came to the fore again recently when one of his works was found to contain a description of pulmonary circulation, one of the matters taken up again by Michael Servetus in the sixteenth century. This discovery by Ibn

Nafis, which might so easily have passed unnoticed, was the more remarkable in that it was arrived at without any dissection and purely by deduction from the data in works by Galen.

Among the compilers who began to proliferate, two are worthy of particular attention. Yakut stands beside Idrisi in a place of special distinction as a geographer, because of the convenience of the work he produced: the alphabetical arrangement of his geographical dictionary making subsequent research an easy task. He was a former Christian slave from Anatolia, indebted to the generosity of his master, a bookseller, for opportunities of extensive study. He travelled in Persia, Mesopotamia, and Syria, and resided for a period first in Khorasan and then in Khwarezm, before coming to Aleppo where he died. It was in the libraries of Merv that his works first took shape. His works are, in fact, more a conscientious assembling of extracts than the fruits of personal observation. He drew for his dictionary on very varied sources, the information gathered being of interest to historians of civilization, ethnographers, natural historians, and folklorists. It should be noted, in passing, that Yakut refers to the havoc wrought by the Mongol invasions. Kazwini, the Persian encyclopaedist who lived in Mesopotamia, was a cosmographer whose work consisted in the popularization of information concerning the firmament, angles, botany, anatomy, the faculties of the soul, zoology, and a geographical dictionary arranged by climates. The whole is devoid alike of the critical spirit and of originality, and in tone is wearisomely didactic. In part, also, it was perhaps the work of a reviser, but it has its place here since 'the East produced probably nothing comparable to it at this period'.

Abd al-Mu'min is the only great Arab musicologist whose work has survived though others before him—Kindi, Farabi, Avicenna, Ibn Haitham, to mention only a few—had devoted attention to musical problems, working usually on the basis of Greek theory. Abd al-Mu'min was prompted to venture on a reform of the scale; specialists in the subject regard his theory as an advance on the Pythagorean system, and the basis for the most perfect scale so far devised. One of his works contains 'a piece that is undoubtedly the oldest example of Arabic or Persian musical notation that has come down to us.'

Two great scholars provide a fitting close to the thirteenth century. Nasir al-din Tusi was a strange personality: a philosopher, a polygraph, and something of a politician. He acquired a sound education from the Ismailians at Almut, where he had been driven to by rebuffs from the caliph. His activity as an astrologer obtained for him the protection of the Mongol conqueror, Hulegu, who continued to further his work, and had a giant observatory built for him in his capital at Meragha. From there, Nasir al-din issued in 1270 the famous Ilkhanian Tables, drawn up in Persian.

He was fully conversant with Greek, and revised and improved on earlier translations of sixteen treatises. His treatise on the quadrilateral is a masterpiece, whether looked upon as a critical exposition of the work of his precursors or as advancing new and subtle propositions. His own hypothesis concerning

the theorem of transversals, the basis of spherical trigonometry, was responsible for the final systematization of this science. His work, however, unlike that of most oriental theorists of the thirteenth century, had little influence in the west.

The same region was the scene for the emergence of the striking personality of Mahmud Shirazi, philosopher, physicist, doctor, astronomer, musical theorist, expositor of tradition, and politician. He left some important records in the field of astronomical geography, written probably under the guidance of his teacher Nasir al-din Tusi, and the first treatise on music in Persian.

4. EUROPE AND BYZANTIUM

A. Progress in the Various Sciences

From the start, we are faced with a problem of classification; the men of the Middle Ages had their own classifications, but these are not the same as ours. Already in the twelfth century the mass of rediscovered knowledge was proving too much for the initial *quadrivium* framework. Hugh of Saint-Victor, in his *Didascalion*, supplemented this with Physics or Physiology, which 'sought the cause of things in their effects and their effects in their causes'. Dominicus Gundisalvi, in about 1150, drew a distinction between theoretical and practical branches, putting in the first category Physics or Natural Science, Mathematics and Metaphysics. Another system of classification ranged the sciences according to the elements in which the phenomena they studied occurred: ether (astronomy, astrology), fire and air (meteorology, optics), earth and water (geology). This diversity is indicative of the lack of any firm, generally applicable criterion. The very word 'science' itself did not convey the specialized meaning that it has today; it was synonymous with 'art' and 'discipline', and stood for any body of knowledge and skill. It would seem best to work on the basis of our own classification system.

Mathematics. Here, Europeans rested more or less content with the assimilation of the ancient legacy as enriched by the Hindus and the Arabs. The great event was the introduction of 'Arabic' numerals.

Until the eleventh century, the only methods of calculation known in Europe had been the mechanical processes necessitated by the use of Roman numerals which were so awkward to manipulate. These processes included counting on the fingers, a method treated of in many manuals of computation; the abacus (a frame with counters strung on or between horizontal bars), of which the exchequer used for the financial reckonings of the English royal house was a variant; and wooden tallies marked with notches of varying depth.

It was probably Gerbert who introduced into Western Christendom the 'gubar' numerals, inscribing the symbols on counters, which he then placed on

the abacus. It is uncertain whether he had fully grasped the idea of positional value. Early in the twelfth century, Adelard of Bath translated al-Khwarizmi's treatise explaining the mechanics of the Hindu numerical system. It was known thereafter as 'algorism', and was to be appreciated at its full value by Leonardo Fibonacci (c. 1170–post 1240), the son of a Pisan merchant who had been educated by a Moslem teacher at Bougie, and had subsequently travelled extensively in Egypt, Syria, and Greece. His efforts, however, were not sufficient to bring about a general adoption of the system. The abacus was held to meet current requirements, and the Hindu numerals to lend themselves more readily to falsification (hence the prohibition of their use in the keeping of accounts until the sixteenth century). Not until a much later date was there a general realization of the new mathematical horizons which were opened up by the use of these numerals.

The techniques of calculation, then known as 'logistics', remained rudimentary. Fibonacci took over from the Arabs what still remains our current procedure for subtraction. Multiplication was treated as a series of addition operations, and doubling remained a further separate operation. Division procedures were a source of particular perplexity: Gerbert sets out no fewer than ten such procedures, and has recourse in the main to a series of subtractions. Fibonacci, however, was able to detail methods of extracting square and cube roots.

Arithmetic, then, consisted in the theory of numbers which had been evolved by the Pythagoreans and expounded after them by Boëthius and Fibonacci. Fibonacci appears also in connection with algebra, the name of which is derived from a treatise by Al Khwarizmi, *Al jabr w'al Muqâbâlah*, translated by Robert of Chester. In his *Flos* (1225) Fibonacci generalized the substitution of letters for numbers in the solution of problems (as, at about the same time, did the German Dominican, Jordanus Nemorarius), and employed a negative quantity in solving financial problems.

Due to these same authors, some progress was also made in three-dimensional geometry. Certain rules make their first appearance in the work of Fibonacci (although it is not certain that he was the first discoverer of them) as, for instance, for ascertaining the volume of the frustum of a pyramid. Jordanus Nemorarius studied plane projections, which were used in connection with the astrolabe and in map-drawing.

Trigonometry, despite a few translations from the Arabic, was scarcely taken up. But the concept of infinite quantities, rejected by Aristotle but recognized by Christianity, set some minds on the road to the differential and integral calculus. Unfortunately, the work accomplished on mathematical infinity around 1300 by scholars in Paris was to be lost sight of in the fifteenth century, until Fermat and Cavalieri worked it out afresh.

Astronomy. The great Greek astronomers, Hipparchus and Ptolemy, had arrived at a series of results on which there could be only minor improvements

pending changes in observational equipment. The ordering of these results into a world system, on the other hand, raised problems and difficulties which the adoption of Christianity had the effect of making more pressing.

The principal astronomical instrument was still the astrolabe, which combined the representation of the world in stereographic projection with a sighting apparatus; this was perfected by the Arabs. The interest it aroused in western Europe is demonstrated by the treatises, still of an outline character, of Gerbert, as well as those of the paralytic monk of Reichenau, Hermann Contractus. Thirteenth-century works on the subject, in particular those of Campanus of Novara and Peter of Maricourt (c. 1263),² give evidence of progress. It was now possible to construct, after the researches of Al Zarqali, an astrolabe valid for all latitudes. Campanus of Novara also issued instructions for the construction of the quadrant, an instrument similar to the astrolabe but comprising only a quarter-circle, and the armillary sphere, a spatial model of the celestial universe.

Meanwhile, European astronomers were making observations and calculations of an increasingly precise nature. William of Saint-Cloud, a pupil of Roger Bacon and the founder of the Parisian astronomical tradition, determined, from the heights of the sun at the solstice, the obliquity of the ecliptic in 1290, which he gave as $23^{\circ}34'$ (correct figure: $23^{\circ}32'$), and the latitude of Paris, for which he gave the correct figure $48^{\circ}50'$. Already several astronomers had perfected the tables of Al Zarqali, and had adapted them to the longitude and latitude of different points; a certain Raimond did this for Marseilles in 1140, and Robert of Chester for London in 1149–50. In Toledo, the 'Alphon-sine Tables' were produced in 1272, under the direction of king Alfonso X—a really remarkable work. Knowledge gained in such advances was applied to the calendar, and from the thirteenth century the deficiencies of the Julian calendar were recognized. But we should not forget that the development of astronomy, as well as that of arithmetic, owed a good deal to the practical experience of merchants and sailors.

The observations of Hipparchus and Ptolemy had already cast doubt on the system of the world evolved by, pre-eminently, Plato and Aristotle. For them the universe was a finite assemblage of homocentric spheres, with the earth, spherical and immobile, at the centre. Spherical shape and regular circular motion alone seemed right for celestial bodies, divine and eternal and composed of ether, as opposed to sublunar bodies, which were made up of the four elements. Now, it was evident from the variations in the brightness of Mars and Venus, in the apparent diameter of the moon, in the central eclipses of the sun, that the celestial bodies were not always at a constant distance from the earth. To conciliate these facts with the theory, Hipparchus and Ptolemy invented the system of epicycles and eccentrics. In Western Christendom in the thirteenth century the controversy between this astronomy and Aristotelian physics was re-opened. Roger Bacon's support assured a victory for Ptolemaic ideas. From then on the idea was paramount that prime importance must be

given to the data of sense, and that the truth or falsity of a theoretical system lay in the degree of its accordance with these data.

The most important thing about this controversy was the fact that it existed at all; its existence kept alive a spirit of honest doubt that was to prove fruitful. Of importance also was the theoretical discussion centring on the divine character of the stars. As this idea was unacceptable to Christianity, an essential condition was fulfilled for the emergence of the concept that between the earth and any wandering star there was no difference in kind. It is in this, and not in the advocacy, by Erigena in the ninth century and by William of Conches at the beginning of the twelfth, of a partially heliocentric system which had been taken over from Aristarchus of Samos (but ill-understood), that there is to be seen in the Christian Middle Ages, in however modest a degree, the paving of the way for Copernicus, over three hundred years later.

Physics. Of all that makes up modern physics, only a very small part had been studied by the thirteenth century. But, it was undoubtedly in this field that, although using the methods and often the solutions of Aristotle, the investigators of the period, by observation and by the application of mathematics, obtained the results holding out most hope for the future.

Falling Bodies. Of the problem of the falling (and the ascending) body, there is little to say: it was a question—following on from Aristotle—of finding a motive force distinct from the moving body, but in contact with it. The answer usually proposed was that of a tendency inhering in the body: a natural movement of the body towards its natural place, namely a place in which there was no body underneath it lighter than itself, and none above it heavier. The idea of attraction exerted at a distance, to be propounded by Newton, was in fact put forward by certain authors, but in general it was dismissed as absurd. The speed of the body continued to be held directly proportional to the strength of the motive force, and inversely to environmental resistance: of the concept of mass and the principle of inertia recognition was yet to come.

More novel was the theory of *impetus*, put forward in outline by Johannes Philoponus about 500, and later developed by the Franciscan Peter Olivi, who died at Narbonne in 1290. What was the explanation of the motions of the celestial bodies? Ancient thinkers had believed them to be drawn by their orbs, themselves moved by celestial intelligence. This was a view which Christian minds found questionable. Peter Olivi was prepared to see the orbs as moved by an intrinsic force, with which they had been endowed at the moment of their creation. This was advocacy of an anti-Aristotelian theory of the impulsion communicated to a projectile and continuing to propel it in the absence of the initial cause of movement.

Statics and Kinematics. The most notable progress was in statics and kinematics. Jordanus Nemorarius, in studying weights that balanced each other at either ends of a lever, made use of the principle that a motive force capable of raising a given weight to a given height was capable of raising a weight x times

as great to the same height divided by x . This, which is known as 'Jordanus's axiom', was the seed from which sprang the principle of virtual displacements. Jordanus also applied the concept of compound forces in the study of a body falling obliquely. He demonstrated that the force moving the body at any instant was the resultant of two forces; natural gravitational attraction to the earth's centre, and a 'violent' propulsion horizontally. The more nearly horizontal the trajectory, the weaker is the gravitational pull exerted along the length of it, the *gravitas secundum situm*, i.e. 'gravity relative to position'.

The anonymous author of the *De Ratione Ponderis* put these ideas of Jordanus to practical effect. He corrected the erroneous solution hitherto given to the problem of the bent lever, and approached the fundamental concept of 'static moments'. Most important of all, he made use of Jordanus's axiom to study bodies running down planes inclined at different angles: if their weights were directly proportional to the angles of inclination, they would be 'of the same force in their descent'. Duhem called this anonymous author 'the precursor of Leonardo da Vinci'. His ideas were drawn on greatly by Leonardo, and his work and that of Jordanus were to serve as the starting-point for some remarkable advances in mechanics from the end of the sixteenth century.

Magnetism. The attention of thirteenth-century physicists was particularly engaged by magnetism. The magnet's property of attraction for iron, and its tendency to north-south orientation, posed the problem of unexplained action at a distance. First European references to the compass occur about 1200, but it was undoubtedly in use at sea before that date. One of the most remarkable works of the thirteenth century is the '*Letter on the Magnet*' by the Parisian master, Peter of Maricourt, which he wrote while he was taking part as a crusader in the siege of the Moslem city of Lucera in Apulia (1269). It contains accounts of some excellent experiments made with magnets, to determine their poles, to invert them etc. An attempt is made to explain the orientation towards the north by cosmic magnetization: the magnet is directed towards the poles of the heavens, on the axis of which the celestial sphere revolves. An explanation closer to the modern conception of terrestrial magnetism was given by Peter of Maricourt's contemporary John of Saint-Amand.

Meteorology. 'Meteorology' covered the study of the phenomena occurring within the elements fire and air. It should be remembered that the element, fire, was not conceived of as an actual flame, but as a principle of combustion, which would take place when acted upon by any of a variety of causes. Thus the hot dry exhalations which the sun's rays caused to rise from the earth were held responsible for aurorae, shooting stars, and comets, all phenomena which medieval thinkers, following in the steps of Aristotle, refused to situate outside the lunar orb, since for them the heavens were susceptible of no change other than that caused by circular motion. This grossly erroneous theory went unchallenged until the sixteenth century.

Optics. From Robert Grosseteste came the impulse to undertake particularly far-reaching investigations in optics. This humbly born Englishman (c. 1175–1253), a student of Oxford, and in his subsequent career first as Friar Minor and later as bishop of Lincoln, that university's steadfast friend and protector, was a true scholar, to whom the researches of Crombie have brought a measure of recognition more nearly approaching his deserts. Possessed of a markedly eclectic mind, he ranged over law, medicine and Greek, as well as mathematics and physics. The stature which, by general consent, is accorded to him enables us to set in clearer perspective, though without diminishing it, the importance of his brilliant pupil, Roger Bacon, too often thought of as an exceptional case. Also a Franciscan, and born in England (c. 1214–92), Bacon studied and later taught in Oxford and Paris. His principal writings (*Opus Majus*, *Opus Minus*, and *Opus Tertium*), produced at the behest of the pope, had as their purpose the demonstration of the practical utility of philosophy, understood in a comprehensive sense, in particular in the conversion of the infidels. The picture which has been painted of him as a man in rebellion against his period, imprisoned by his order, and in 1277 condemned, is a misleading one. His continual recriminations about the inadequacy of the means placed at his disposal, and his audacious speculations about the future, constitute the only foundation for such a view.

The passionate preoccupation of Grosseteste and Bacon with optics sprang from the influence of neo-Platonism: they attributed to primordial matter a certain spatial dimension, a 'common corporeity', which they identified with light. The laws of geometric optics must then be fundamental to all physical reality. The propagation of light seemed, in addition, the best example of the action of one object on another at a distance.

The Rainbow. Grosseteste and Bacon sought in particular an explanation of the form and colour of the rainbow. Breaking away from the Aristotelian theory of the reflection of the solar rays from drops of cloud-water, Grosseteste arrived at a theory of the double refraction of these rays, on entering and on leaving the cloud, which acted as a kind of lens. This led him to study refraction, and, in passing, he made the suggestion that lenses might be used to enlarge small or distant objects. Bacon would seem closer in ideas to Aristotle, whose theory of the rainbow he in the main accepted, and to the Arabs, in whose train he made his study of the humah eye. The scientific spirit was more clearly seen in the work of the Pole, Witelo (born c. 1230), who determined experimentally new values for the angles of refraction of light passing through air, water, and glass, and succeeded in producing the colours of the spectrum by passing light through a hexagonal crystal. Finally, the German Dominican, Dietrich of Freiburg displayed, in his *De Iride*, a quite remarkable understanding of the phenomenon. He distinguished a primary and a secondary arc, he contrived in his explanation a combination of the data of both reflection and refraction, he ascertained that the colours of the rainbow always

occurred in the same order, and attempted an explanation. In fact, he stopped short only of the later Newtonian discovery of the recombination of the colours in white light.

Alchemy and Chemistry. The twelfth century saw the translation of the Arab writings on alchemy; after which treatises, ascribed to illustrious authors, ancient or modern, appeared. Even the enigmatic Geber was not excepted. Indeed, there was scarcely a scholar of note who had not at least one treatise attributed to himself. From reflection on these data, medieval alchemists arrived at a few fairly clear tenets: that all substances are of the same fundamental matter; that matter and its properties are distinct; and that such properties may be added or withdrawn. It follows from this that it is possible to obtain gold by taking an analogous substance, eliminating from it such properties as gold does not have, and then colouring with an orpiment the substance so obtained. Such a line of reasoning, of course, rested on a twofold confusion, of matter and its properties, and the phenomena it manifests.

Whether the experiments made by the alchemists made any appreciable contribution to the body of practical knowledge corresponding to chemistry is uncertain.³ Such contributions came rather from medicines and pharmacy, from the decorative arts, from the metal industry, and even from the art of war. From the early Middle Ages there had been current in Europe manuals of practical instructions handed down from the Roman world: *Instructions for Making Dyes (Compositiones ad Tingenda)*, for instance, the oldest text of which date from the eighth or ninth century; the *Little Key to Painting (Mappe Clavicula)*, of which manuscripts are extant from the tenth century, and, of a more elaborate kind, from the twelfth century. Towards the end of the eleventh or at the beginning of the twelfth century, the monk Theophilus described, in his treatise *On Various Arts*, the preparation of oil colours and the making of unbreakable glass, which was much prized for stained-glass windows.

Distillation of Alcohol. Any assessment from these works of the exact nature or the date of the advances made is very difficult, by reason of the imprecise nature of the vocabulary which these medieval authors used: acids, for instance, were called 'waters', and the word 'alcohol', taken over from the Arabic, signified, until the eighteenth century, any kind of principle. The method of distillation of alcohol by means of the addition to the product to be distilled of a substance which absorbed part of its water, however, was apparently discovered in Salerno in the first half of the twelfth century, thus was obtained a 60 per cent alcohol, the 'firewater'. A century later, in Florence, Taddeo Alderotti, instead of condensing the alcohol in the still itself, led it through a discharge pipe to another, coiled still, known as a 'worm', which was cooled by running water—the modern method which produced a 90 to 95 per cent alcohol. About 1300, the Catalan doctor, Arnald of Villanova, drew attention to the medicinal properties of this product, and called it 'water of life'. Indeed, the uses to be found for it were various.

Geography. Knowledge of the world had shown a marked shrinkage in the third and fourth centuries, and Roman geographers like Solinus had interlarded what was left with information that was entirely mythical. From the ninth century onwards, however, thanks to Scandinavian travellers, horizons began once more to widen. A Dane named Gardar Svavarsson, made the journey round Iceland in about 860; in 878 or 886 a Norwegian, Ohthere, rounded the North Cape and reached the mouth of the Dvina. Then came the discovery of Greenland by the Norwegian, Gumbjörn, in about 900, and its exploration by another Norwegian, Eric the Red, in about 980. Eric's son Leif, attempting to establish a direct route from Norway to Greenland, was carried towards Vinland, a part of North America (1000). Not long afterwards, Thorfin Karlsefni set up an Icelandic colony there. This proved short-lived, but it seems fairly certain that he set foot briefly in Newfoundland and southern Labrador, and it is possible that he travelled up the valley of the Saint Lawrence, and reached even as far as Nova Scotia and New England. Nor were the Scandinavians mere coverers of distances. The *Konungs Skuggsjä* (Mirror of the King), dating from about 1250, is the work of an anonymous Norwegian who had lived in Iceland, and, with its admirable descriptions of glaciers and icebergs, is the only European work to give evidence of a true geographic spirit.

The other great European contribution to the knowledge of the globe is represented by the journeys made by missionaries and merchants in the thirteenth century into Asia, in connection with the Mongol conquest. From the time of Jean del Plan del Carpini, who reached Karakorum (1245-7), to that of Marco Polo, who lived for a long time (1271-95) in China, some dozen travellers, most of them Italian, left more or less detailed accounts of their journeyings. The most remarkable, in the precision of its observation, is perhaps that of the Flemish Franciscan, Guillaume de Rubrouck (1253-5) who among other things re-established the fact that the Caspian was an inland sea.

Maps. Even more disappointing was the representation of the world. In the few '*Mappae Mundi*' that have come down to us (for example, the work of the anonymous geographer of Ravenna from the eighth century, and especially the map attributed to Hereford, from the thirteenth) considerations of exact representation seem to have been subordinated to a concern for aesthetic effect, aimed at producing an ornamental 'design, or deferring to some religious consideration. For instance, Jerusalem is placed in a central position and Palestine is enlarged disproportionately to hold all the biblical place names.

More accurate maps were nevertheless a necessity, and sectional topographical maps in due course made their appearance. These were intended for the elucidation of itineraries, as, for example, the four maps of Britain produced in the thirteenth century by the English historian, Mathew Paris, and the *portulan* charts, showing only seas and coast-lines, which may have been in use

among European sailors from the twelfth century onwards, though a definite mention of them dates only from the second half of the thirteenth.

Geographical Problems. Geographical questions were also, for reasons which were partly theological, subjects of considerable controversy. That the earth was a sphere was throughout maintained, the Church expressing no opposition to such a view, although there were writers who advanced other theories. It is questionable, however, whether this theological affirmation was based on any very clear mental picture of its implications. Considerations of climatic variations gave rise to doubts about the inhabitability of the sub-tropical areas and the southern hemisphere. Grosseteste followed Ptolemy in declaring such regions to be uninhabitable; Albertus Magnus, on the other hand, maintained that, as none of Nature's activity could be in vain, the south must have its temperate zone, inhabited by men, and that these regions were not separated from the known world by insuperable obstacles.

The relative geographical distribution of land and sea continued to engage two schools in controversy. The orthodox school seems to have favoured the 'oceanic theory' of Ptolemy, for which there was biblical confirmation (for instance, in Psalm XXIV, according to which God established the earth on the waters). The other school supported the 'continental theory', however, affirming the existence of three continental land masses like Eurasia. This story could also claim biblical substantiation, and moreover it received the support of Roger Bacon, and was not without its influence on Christopher Columbus.

The tides also received attention, since these were seen as an admirable example of astral influence: it was generally agreed that they were the result of the action of the moon. The Venerable Bede, having assembled a basis of sound information, drew up a valuable table of tides and their variations in Britain.

Problems of geology and relief were scarcely formulated, save in relation to extraordinary phenomena such as volcanoes. There was a general reluctance to be satisfied, however, with the explanation of the water supply of rivers merely in terms of precipitations. It was believed that the waters contained in the earth, being lighter, rose naturally to the surface, and that only the action of the stars prevented them from covering it entirely.

Biology. Throughout the early Middle Ages, the subject of biology was confined to the compilation of Herbals and Bestiaries, which took their inspiration from the *Physiologus* and from Pliny. They are works in which observation of nature plays next to no part, and in which all the stress, so far as the facts are concerned, is laid on their symbolic and morally instructive aspects. How was the feat of advancing from these to a science deserving of the name accomplished?

Some part was played, of course, by translations from Greek, especially the *De Plantis*, compiled from Aristotle and Theophrastus, and Aristotle's own

De Animalibus. But book knowledge alone would not have sufficed. The history of art gives proof of a newly awakened interest in nature itself, and an increasing degree of accuracy and precision in the observation of it. Of this the floral-motif decoration in the churches provides the best illustration. From antiquity, Carolingian art, and Romanesque art in its early stages, inherited a type of degenerate Corinthian capital, on which the representations of the acanthus leaf was simplified in the extreme, or embellished in a fashion which indicated that all idea of the object originally chosen for representation had been lost. From about 1140 onwards, there was an attempt by Gothic sculptors to give this leaf a certain life; they carefully traced projecting features, and cut into the volute small leaves, resembling the first curling fronds of spring. Towards 1200, the representation of this plant became more and more exact: stems, flowers, and fruit made their appearance among the leaves; twentieth-century botanists are even able to identify the species adorning these capitals.

Pharmacy. On the scientific level, this observation derived further stimulus from the requirements of pharmacy. More or less faithful translations of Dioscorides had been supplemented quite early by descriptions of the monastic gardens in which 'simples' were grown, as for example the ninth-century poem *Hortulus*, by Walafrid Strabo. A few English and German Herbals of the eleventh and twelfth centuries describe plants which are characteristic of the Nordic countries. Progress is most appreciable in the Herbals of Rufinus, written about 1287, and enriched by the author with a great many personal observations and judicious comparisons.

Falconry. In zoology, a comparable rôle, if a more limited one, was played by falconry. The important work here is the *De Arte Venandi cum Avibus*, i.e. *The Art of Falconry* of Frederick II in which anatomical descriptions, analyses of behaviour, and the distinctions between various types of falcon, were all illustrated with most accurate drawings. Mistrust of knowledge acquired from books, and respect for experiment, are here in evidence to an astonishing degree. The same monarch maintained a menagerie, which he took about with him, and which aroused much curiosity among the various peoples he visited.

Albertus Magnus. The best biologist of the thirteenth century was Albertus Magnus. In annotating the treatises of Aristotle, he added descriptions of numerous Nordic animals and plants. He also attempted some tentative classifications, which, rudimentary as they were, evince a true care for the scientific approach. He was much interested in questions of reproduction and embryology, finding himself in general in accord with the ideas of Aristotle, but seeking none the less to extend them. He laid much stress on the concept of vital heat, which was localized in the heart, and was the source of all activity; according to the extent of its presence in parents, so their offspring resembled them in greater or lesser degree. Following Aristotle, Albertus held to the theory of epigenesis; but he also opened hens' eggs at various stages of

development, and studied the development of the foetus in fish and mammals. His account of the reproductive processes of insects is much more accurate than that given by Aristotle.

Medicine. The Schools. The medical schools having disappeared, there were very few lay doctors in the early medieval period outside the monasteries, where certain medical texts were preserved. The medical renaissance of the eleventh century derived from the introduction of Graeco-Arabic medicine and the progress made in teaching it.⁴

Some considered assessment is called for here of the part played by the school of Salerno, which has sometimes been exaggerated. It is certain that there were at Salerno, from the middle of the ninth century, practising doctors who were reproached in France with a lack of any general culture. In the course of the eleventh century a body of medical texts was accumulated there, including work from Monte Cassino, and translations by Constantine the African and his pupil, John the Saracen. In the twelfth century work of greater originality was added to it, including *The Anatomy of the Pig*, an animal which was studied as being closest in structure to man. At the end of the twelfth century came Roger of Salerno, the first great European surgeon; but it was not until about 1200 that Salerno could boast an organized medical school, properly speaking, as opposed to a system of apprenticeship to particular teachers. In 1231, the school received the status of a university, but by that time it was already on the decline.

In the course of the twelfth and thirteenth centuries, other centres of instruction came rapidly into being. In Bologna, the teaching of medicine, which had been started at the latest at the end of the eleventh century, was brilliant, and came second only to the teaching of law. The great original contribution of Bologna was the importance attached to surgery, and, in the anatomy course, to dissection. The first results of the method were seen in the *Chirurgia Magna (Major Surgery)* of Bruno of Longoburgo (1252), who taught at the university of Padua, which had grown up as an offshoot of Bologna. Towards 1275, the Bolognese, William of Saliceto, carried the work even further. Though envisaged rather as a means of illustrating lectures than as a method of research, dissection enabled Mondino de Luzzi, another Bolognese teacher, to produce an *Anatomy* that remained a classic until the sixteenth century.

There were still other teaching centres: at Montpellier, where a judicious balance was maintained between general education through the liberal arts and strictly medical studies; in the Iberian peninsula, which produced Peter of Spain (born probably in Lisbon), author of a compilation for poor students, and in 1276 elected pope under the name of John XXI, and the Catalan doctor, Arnald of Villanova (c. 1240–1311).

Unfortunately, a dividing line continued to be drawn between doctors who were trained at a university and had a wide, but sometimes over-theoretical

knowledge, and surgeons, apothecaries, and barbers, who were the products of practical apprenticeship, whom the doctors, despite the example of Bologna, held to be inferior.

Advances in Medicine. Out of such instruction and such practice, what new acquisitions can be discerned? (Pl. 30, a, b.) Anatomy and physiology remained based on the ideas of Galen. Mondino de Luzzi shed light on a few points, discovering for instance, the functions of the kidneys; on the other hand, he took Aristotle's view of the brain, as against that held by Galen, and looked upon it as merely an organ for the cooling of the heart. Diagnosis was made primarily from an examination of the urine and the taking of the pulse, even though there were being produced, in Bologna in particular, under the heading of *consilia* and in a scholastic form, descriptions of diseases of a more precise nature. Therapeutic measures, especially, showed little development, and belief in a spontaneous re-establishment of the balance of the humours, which the malady was thought to have disturbed, tended to diminish the importance attached to them. In anaesthesia, however, from the twelfth century onwards, there was progress; and in Bologna the treatment of diseases of the skin with minerals, such as antimony and mercury, had begun.

In the last analysis, the positive side of the record is primarily the achievement of a few specialists. The surgeons in Salerno developed excellent techniques for the treatment of fractures, haemorrhages, hernias, and head wounds. Their colleagues in Bologna reproached them for causing wounds to generate pus by the application of fatty ointments, and confined their own active measures to the cleaning of wounds with wine and the drawing together of the edges.

The tradition of Arab ophthalmology was extended here in Western Europe, by some Jewish doctors and also by Peter of Spain and Arnald of Villanova. And the advent of spectacles in the thirteenth century is, though still modest, evidence of appreciable progress. All these, however, were advances in matters of detail: the modern medical science, for which advances in anatomy were paving the way, was not to come effectively into being until the eighteenth century and after.

B. Attempt at an Overall Assessment

The Contribution of Byzantium. In such a science-by-science exposition as the above, the contribution of Byzantium tends, because of its mediocrity, to have only a small space allotted to it. Byzantium was nevertheless in a better position than western Europe to develop the heritage of Hellenistic science. The sixth century seemed to bear promise of such a development, producing as it did the writings on physics and medicine of Arthemios and Alexander of Tralles, the geographical descriptions of Cosmos Indicopleustes, and, most important, the remarkable work of John Philoponus, an original thinker who anticipated the concept of inertia, and refuted arguments against the existence of the vacuum.

But it was a promise which was not fulfilled, despite the encyclopaedias and treatises on alchemy produced in the first wave of enthusiasm of the Hellenistic renaissances. The source of the few revitalizing elements was again Islam: the translations of Arab medical writings by Simeon Seth towards the end of the eleventh century, and the adoption of the Hindu numerals by Maximus Planudes towards the end of the thirteenth. A scientific curiosity was then awakened, but it came too late. The tragic destiny of the Byzantine Empire left it no time to bear fruit.

The Contribution of Europe. The scientific contribution of Europe was, admittedly, not very much richer: in astronomy, the obtaining of more exact measurements, and the exposure of the deficiencies of the Julian calendar; in mathematics, the introduction of Hindu numerals, and, thanks to Fibonacci, some advances in algebra; in physics, seminal studies in statics and kinematics, standing to the credit of Jordanus Nemorarius, the work of Peter of Maricourt on magnetism, the formation of the rainbow finally explained by Dietrich of Freiberg; in chemistry, probably, the distillation of alcohol; in geography, the increased knowledge of Asia; in biology, through the work mainly of Albertus Magnus and Frederick II, more precise and more comprehensive descriptions; and in medicine, the first steps in dissection, and some improvements in surgical technique. In all this, there was no major discovery, but nevertheless the foundations were laid, through the assimilation of the science of antiquity, for the future development of modern science.

The Total Picture. We should rather look at the picture as a whole and not merely at its separate parts. The period from the eleventh to the thirteenth century saw a development of no small significance. In the course of it, the field of operation of scientific investigation to some extent received its definition, and the methods of science became the subject of a growing interest and analysis; in short, a whole mental climate was created in which the auguries for scientific advance were more propitious.

Science only gradually became clearly aware that its objective must be autonomy. Through the early Middle Ages, the physical universe was seen as an assemblage of divine symbols, of which science might furnish an interpretation. But it was a science befogged by a combination of moralizing tendencies and Pythagorean speculations about number. Such naïve imagery was perpetuated, in Bestiaries, Lapidaries, and various versions of the *Imago Mundi*, right on into the thirteenth century: it had by that time, however, ceased to be regarded as scientific.

The Object of Science. For a while, the object of science was seen as the rational explanation of the events of the Bible. Well into the twelfth century we find the master, Thierry of Chartres, essaying an interpretation of Genesis on the basis of Platonist teaching, which conceived the creation initially of the four elements, everything else following by a chain of physical cause and effect.

The result of this work was the realization of the need for a less literal interpretation of the Scriptures. Men then looked to science for a rational explanation of the data of sensory perception. Since Augustine, Christian thought had affirmed that all was 'number, weight, and measure'. And a rediscovered Aristotelianism contributed further to the re-establishment of the status of sensory data.

The Secrets of Nature. This passion for science was not, nevertheless, of the same 'disinterested' nature as that of the ancient Greeks. The desire to explain the universe and thereby to demonstrate the wisdom of God, was not the only motive behind the patient translation and study on the part of so many scholars of the writings of Graeco-Arabic science. A belief was also current that with the discovery of the secrets of nature would come the means to act upon and control it. It was an 'activist' attitude already assumed by many Arab scholars, but now even more pronounced in Europe, where it produced the astonishing anticipations of a Roger Bacon. There was a conviction, too, that once in possession of the secrets of nature, and of a reliable rational procedure, Christians would be able to foretell the future, and convince the infidels—an example of the progress of science preparing the triumph of the Faith.

Scientific Methods. Reflection on scientific methods produced a certain amount that was complementary to Aristotle. Robert Grosseteste distinguished three aspects in these methods. The first was the inductive aspect, the analysis of the composite objects of sense-perception. Such a 'resolution' allowed for the isolation of the principles producing such effects, and the tracing of effects to causes; the ensuing 'composition' consisted in the reconstruction of the phenomenon, showing by deduction the derivation of the particular effect from the general case.

The second aspect was the experimental, in which the experiment (or failing that, a systematic series of observations) verified the explanatory principles arrived at by induction or intuition, and effected the passage from sensation to a universal experimental principle. Its usage was based on two principles which Grosseteste regarded as established: 'Objects of the same nature produce the same effects in conformity with their nature' (the principle of the uniformity of nature); and 'The processes of nature are carried out in the simplest way possible' (the principle of economy). The third aspect which Grosseteste stressed was the mathematical. 'All causes of natural effects,' he writes, 'should be expressible by lines, angles, and figures, without which it would be impossible to know the cause of these effects.'

Bacon's 'Experimental Science'. Bacon accepted most of these views, and furthermore affirmed the development of an 'experimental science', distinct from all other sciences, and having as its object, in his view, the study of the occult properties of bodies. Precisely because these were occult, the study of them was not possible by rational procedure, but only by experiments made at

random. Bacon looked to this science to discover marvels, and to translate into reality the self-propelling vehicles, the ships, the submarines, and the aeroplanes, which are prophesied in a famous work of his.

St Francis and Nature. Mention has been made, in connection with biology, of the progress made in art since the middle of the twelfth century in the representation of nature. This realism was one element in what might be termed a nascent scientific spirit. It would be difficult not to relate it to the technical progress that, in giving man increased power to modify nature, focused his attention more closely on it, in spite of the fact that the links between science and technology were as yet only loose. Still greater importance attaches to the developments in philosophic and religious attitudes, which are significant at least as pointers. In the twelfth century, the 'Chartres naturalism' was conducive to the praise of nature as the harmonious power, the 'principle of the world'. What should arouse men's admiration of her were not the surprising phenomena, the 'marvels', but those which, in their very regularity, revealed her laws. In the thirteenth century St Francis, preaching to the birds and flowers, singing the praises of the sun, gave the objective study of nature an emotional impetus. It was no mere chance, although it was a development which the *Poverello* did not envisage, that the motive force in the scientific school in Oxford came from the Franciscans.

The Scientific Spirit. There is a part of the scientific spirit which consists in the adoption of a critical attitude which, it must be admitted, was, even in the twelfth and thirteenth centuries, not conspicuously present. A rational scepticism does make its appearance, however, in certain discussions and affirmations, and its manifestations are worth enumerating. The proliferation of hagiography is of course regarded, and rightly so, as one of the typical expressions of medieval credulity. The attempts to make stricter and more precise the requirements for canonization nevertheless represent an advance, no doubt connected with the development of canon law. In the period from the ninth to the twelfth centuries more especially, there were numerous examples of the fabrication of false documents to replace destroyed archives or to support the claims of interested parties: but as particular interests were seen to be involved in them, the forgeries became matters for dispute more or less violent in proportion to the personal involvements. In 1198 pope Innocent III actually publicized the techniques which the forgers usually adopted, and gave instructions on how to recognize their handiwork. Celebrated authors such as Aristotle and St Augustine had apocryphal texts attributed to them as an everyday occurrence: but here also progress could be discerned as from time to time such attributions were subjected to intelligent disputation. These rudimentary displays of a scientific spirit were confined, however, to a very small minority; and its stimulus had always to come from personal motives, or from a fondness for polemic. It had a long way to go before it acquired sufficient force and generality to impose itself as the norm.

The Limitations of Science. It will be seen then that, if it is permissible to speak, in connection with the period before 1300, of an awakening of a scientific spirit, due regard must as well be paid to its limitations.

The first of these limitations was the fact that scientific research consisted primarily, as was historically inevitable, in rediscovering in books the heritage of the past. This rediscovery was attended by certain disadvantages, such as the predominance of book learning over the direct observation of nature, and an excessive veneration of the masters of the past, particularly Aristotle. When the teachings of Aristotle were too obviously at variance with Christian doctrine or the evidence of the senses, they were, of course, questioned, but it was only gradually that such an approach became habitual.

The Boundary between Science and Magic. The fields of science and magic were still not clearly demarcated. Even while they paid lip-service to the concept of human liberty, too many thinkers saw in the stars influences which affected all men, most of them absolutely, thus making their lives so prescribed that they were little better than those of the beasts. The collective destiny of peoples was thought to be subjected to the same astral control, and Roger Bacon went so far as to essay an astrological interpretation of history, linking the appearance of the prophets and religions with the most notable conjunctions of the planets. Physics, chemistry, and medicine suffered the same astrological contamination. Frederick II, one of the most 'modern' minds of the thirteenth century, was also one of those who frequently had recourse to the advice of astrologers.

Christian thinkers likewise, while they rejected 'bad magic' which invoked the aid of demons for evil ends and rested largely on a basis of illusion, gave their approval for a 'good magic', which confined itself to the utilization of the occult properties of bodies. We are thus brought back to the 'experimental science' of Roger Bacon, which was the result of the drawing of an inadequate distinction between those natural properties of bodies which the senses could not directly apprehend, and magical properties. This distinction was arrived at only by very slow degrees.

The Quantitative Aspect of Science. More serious still was the inadequate development of the quantitative aspect of science, a criticism which must be levelled chiefly at the fields of physics and chemistry. Medicine, on the contrary, attached almost excessive importance to the one quantitative element at its disposal, namely, the measurement of the pulse rate. Astronomy, too, had arrived at a series of measurements of a precision that, given the technical conditions under which they were obtained, still seems remarkable.

What was the source of this weakness? Inadequacy of mathematical technique has been pointed to: but it is hard to see why a technique that could rise to the adaptation and correction of the tables of Ptolemy and Al Zarqali should be found wanting when it came to the establishment of the most elementary laws of terrestrial physics. It is this discrepancy that has seemed

most striking. Some authors have put forward the explanation that astronomical mechanics had been carried to such a degree of precision because the very motion of the heavenly bodies, perfect and constant, was held by medieval thinkers to have a precision of which they thought the bodies of this earth, the 'world of the approximate', would be incapable. But Christian thinkers do not appear to have credited terrestrial phenomena with any such indetermination: indeed, it was precisely because all was 'number, weight, and measure' that nature manifested God's wisdom. That such intensity was so early brought to the study of celestial phenomena is explicable simply in terms of the major significance of the problems which their movements involved.

Man and Measure. Is the fault traceable then simply to a want of mental precision, or an inadequately developed sense of measurement? The indifference of most medieval texts to matters of numerical exactitude is well known: populations are attributed to towns, and numerical strength to armies that are obviously improbable. Measurement and precision, however, are striven after when they are seen to be necessary. Measurement of time is a case in point. Discussion of the calendar, so important from the religious point of view, led to agreement on the fixing of a date for Easter, and the condemnation of the Julian calendar's dislocation (11' 13" a year). At the dictate of the new urban activity men abandoned in the early fourteenth century the old system of unequal hours, marked by the ringing of church bells (twelve between sunrise and sunset, twelve between sunset and sunrise), for the modern system of hours of equal length, indicated by the striking of mechanical clocks. Admittedly, the working of the clocks was apt to be unpredictable, but this was now simply a technical defect, capable of adjustment. In polyphonic music, advance in measurement was evident, in the course of the thirteenth century, in an effort to diversify rhythms, and to find adequate representation for them in a 'measured' notation. And, of course, scholars had their own perfectly precise representation of time, as for instance the encyclopaedist, Bartholomaeus Anglicus, who divided the day into twenty-four hours of equal duration, and each hour into four points or forty moments, each of which comprised twelve ounces, each made up of forty-seven atoms.

A distinction must be made, then, between the habits of mind of the men of science and those more generally current. Not, of course, that there was no relation between them: as L. Febvre has put it, the member of a society which does not calculate 'has a mentality quite other than that of the man, even the ignorant man, who lives in a society attuned as a whole to the precision of modes of calculation'. The conclusion would seem to be that this spirit of precision, like the critical one, existed and that it came to the fore where the need for it was felt, but that this need was not yet felt in sufficient degree for its usage to have become general, nor to have achieved the eventual 'information' of the mass of society.

Difficulties in Measuring. This brings us to the roots of the matter: that

quantitative physics was still in its infancy was partly due to the difficulties met in the very measuring of its phenomena. The motion of the stars, both slow and apparent, can be easily measured. The same possibility occurs in acoustics, and through the study of vibrating chords Pythagoras imbued this branch with arithmetic. But in the other fields, the phenomena are both very rapid and unapparent. To mark them accurately, very complex and refined implements, such as chronometers, microscopes, etc. are necessary, which in their turn could be manufactured only thanks to the advancement of theories and techniques. Thus the progress of physics, extremely slow until this possibility of measurement was created, and extremely rapid thereafter, can be understood.

Being in its infancy, quantitative physics was not in a state to challenge the traditional objectives then assigned to science. At the very time when he was endeavouring to introduce geometry into optics, and, through optics, into the description of all natural phenomena, Grosseteste himself was professing his agreement with Aristotle that, while such a procedure might lead to the reconstruction of the real sequence of events, it could teach nothing of the causes of those events. The causes must be sought in the existence of 'virtues', substances which were liable to produce these effects, ordered in such a way as to produce them, and placed in conditions causing them to do so. Neglect of the quantitative aspect of physics was comforted by the stress laid by Aristotle on the qualitative aspect. All that we can point to in the eventual out-dating of Aristotle, which was to take place in this as in other respects, are a few indications apparent from the thirteenth century.

Science and Technology. Such a mental approach explains also the lack of liaison between science and technology, which was detrimental to both. Science lacked adequate technical backing. Except for a few advances in matters of detail, certain branches of science had, by the end of the thirteenth century, been developed as far as it was possible before the invention of such instruments as the telescope, the microscope, and the thermometer. Alchemy serves also to demonstrate how readily an imperfect technique can lead to the incorrect postulation of principles—for instance the principle of the transmutability of matter—which had a serious stunting effect on the growth of science proper.

Conversely, technology, as divorced from science, was slow to advance, at times even paralysed. The case of optics is a striking illustration: as early as the thirteenth century, specialists knew how to make spectacles with convex lenses for the counteraction of long sight and the effects of age. The understanding of refraction and the techniques of glass-making had both of them by this time reached a level at which further advances, such as the production of magnifying lenses and their arrangement end to end for telescopic purposes or for use as a microscope, should have been possible. That no such idea found practical application was due to the fact that glass-making had remained a

matter for artisans. The realization of the possibilities was not to take place until the beginning of the seventeenth century.

Such then were the tasks still to be accomplished: a reassessment of the fundamental assumptions of ancient science; the development of the quantitative aspect, or measurement, and the quest for laws which could be expressed mathematically; and the establishment of a regular liaison between science and technology.⁵

NOTES

1. *kiblah*, the point to which Moslems turn at prayer, i.e. the temple at Mecca.
2. Although Pierre de Maricourt's most important contribution was his study on the compass. (R. Lopez.)
3. It would seem to me that the author is somewhat unfair to alchemists. Of course, whatever discovery they may have made in chemistry was accidental since they were on a false track; but the discoveries in optics of the Oxford school were also accidental since they were looking for the wrong principle; virtually all theoretical science of the Middle Ages had no 'scientific' aims in the modern sense, as the author says at the beginning of the chapter. However, the contribution of the alchemists added significantly to the tools and techniques of chemistry; their rôle in distilling eau-de-vie and alcohol, obtaining nitric and sulphuric acid, etc. is undeniable, and it is hard to decide whether they helped medicine more or less than medicine helped them. Moreover, their assumption that all substances go back to one fundamental matter, and that matter can be transformed by heat, water, etc. is at least as scientifically true as the doctrines about gravity, which are mentioned at page 272. (R. Lopez.)
4. P. O. Kristeller 'The School of Salerno', *Bulletin of the History of Medicine*, XVII (1945) and others have pointed out that progress at first may have derived not so much from discovery of Graeco-Arabic (Jewish, I would add) works, as from the opposite fact, that the disappearance of most such works enabled the early Salerno physicians to start again empirical treatment without being encumbered by certain erroneous notions of ancient science. (R. Lopez.)
5. While on the whole the judgment seems well balanced and 'nuancé', it seems to lack one very important element: the teleological tendency of scientific curiosity. Since it was believed that the universe was created by God with a definite purpose, the basic aim of investigation was knowing the purpose (or potentiality) of a thing, more than its actual and measurable functioning. In other terms, the usual question was 'what for?', 'to what purpose?' rather than 'how?', 'how much?' or 'why?' (R. Lopez.)

CHAPTER XIII

LITERARY EXPRESSION

I. THE FAR EAST

A. Chinese Poetry and the Return to Nature

THE economic and social crisis which followed the fall of the Han dynasty (third century) had created a climate of anxiety which imparted to the literature of the Three Kingdoms its character of despair, agitation and evasion. The following epoch of the Six Dynasties inherited the same trends, and the writers of the fifth century evolve their wonderful tales and elegiac poems. To their own preoccupations they add those of the philosophers, for the scruples arising from the order and clarity provided by the new Buddhist translations succeeded the religious doubts which had worried the thinkers of the fourth century to the point of anguish. Shen yo (441–513), as a result of his reflections on language and phonology, decided to establish a classification of tones, which became the basis of a new prosody at the very time when the poet and painter Hsieh Ho drafted the 'Six Rules' which were to have a profound influence on the evolution of painting. This interest in the categories of works and the classification of artists produced the Treatise on Poetry (*Shih p'in*) by Chong Hung (about 500). A prince of the Liang dynasty compiled, about 530, the *Wen hsuan*, an anthology of poems chosen for their quality and beauty of form without any political or moral considerations.

In parallel with this new assessment of literature freed from all didactic and fully imbued with sentiment, there emerges a more marked taste for form. The ideal defined by Lu Chi (261–303) of harmony between the form and the substance is surpassed. Soon, the style of parallel sentences (*p'ien-wen*) and prosodic virtuosity dulls the meaning and often renders it obscure. This is why, of all the fifth- and sixth-century poets, the most ancient, Lao Chien (392–427), remains the greatest and the most admired by men of letters and true poets. A prematurely retired official, he expresses the lassitude of the century towards the vanities of this world. A friend of the earth and in love with nature, he constitutes the Taoist type of humanist who has returned to nature. Fond of simplicity and good wine, he bears witness to the eternal Chinese common sense. Undoubtedly, his cares, consolations and dreams are those of the past century, but his style is less pretentious. An enemy of embellishments, he prefers the ordinary vocabulary which brings him close to the peasant. Every Chinese knows his work, and each artist remembers his passion for chrysanthemums:

I built my hut in a zone of human habitation,
 Yet near me there sounds no noise of horse or coach.
 Would you know how that is possible?
 A heart that is distant creates a wilderness round it.
 I pluck chrysanthemums under the eastern hedge,
 Then gaze long at the distant summer hills.
 The mountain air is fresh at the dusk of day:
 The flying birds two by two return.
 In these things there lies a deep meaning;
 Yet when we would express it, words suddenly fail us.

(trans. A. Waley)

His poems opened up the era of pure poetry, and his example was to inspire numerous poets in the centuries that followed. But the simple life which he preached was not adopted by his disciples on that account. The latter were generally to flee evil by cultivating a life of luxury and pleasure. Thus, an entire literature singing the praises of wine and women developed at the Imperial court of the southern dynasties, giving rise to a particular style—the Palace Style (*kung-tii*). In addition to the folk songs inspired by the short poems of olden days (*chueh-chu*), to the elegiac songs and lyrical ballads (*Yueh fu*), to the poetical descriptions of the past (*fu*) and to the lovers' quatrains, the artists of the Six Dynasties added an abundance of legendary stories (*Ch'uan ch'i*). Under the influence of the Buddhistic apologetics, visions of hell or paradise, imaginary voyages and similar texts (*pien wen*), these tales sometimes bring something of the wonderful to the people. They bring them the same comfort of unreality as the visions of a lost world, that of the salon aristocrats discussing the essence of things (*ching-t'an*) and refining the philosophical, metaphysical or aesthetic mind.

For the classification of values known during these centuries, the T'ang dynasty was to substitute order pure and simple. The Confucian spirit, which had been eclipsed by the Taoism that had been fashionable for two centuries, reappeared, and the writers of the north who had been ousted from national life by the barbarian occupation, reassumed their place in literary production. Literary exercises became one of the subjects of the newly restored examinations. The poems conforming to strict rules (*lu shih*) recommended in the fifth century by the adepts of Shen Yo were, in the seventh century, clearly codified. The poem had to have eight lines each of five to seven characters, rhymes had to have the same tone, and the caesura always had to fall at the same place. But it was one of the variants (*p'ai lu*), without any limitation regarding the number of verses and without strictness regarding rhymes, which was included in the examination syllabus. That being so, every scholar could imagine himself to be a poet, and the versifiers were convinced of it. In prose, the examinations included a narration on a given subject and favoured the production of encyclopaedic works stuffed with the sort of quotations which everyone should know. At the same time there appeared a vivid

narrative style—the first step towards the Chinese novel—which had its source in the wonderful tales (*ch'u'an ch'i*) of the past and the imaginary biographies.

The ancient poetic styles, which owed their very existence to music, were suddenly deprived of their support. Contacts with the West and the cosmopolitanism of the T'angs with their vogue of foreign music (from India, Iran and central Asia) imparted an outmoded character to the old tradition. It was necessary to adapt the old words to new tunes or write new ones. This turning point marks the birth of a new type, the *tz'u*, a song with irregular verses, each sort of which bore the name of the music which accompanied it and which, unlike the poetry of old, allowed of spoken parts (*shih*). This trend of prosody towards flexibility, accompanied by the *tz'u* vogue, explains the golden age of poetry at the court of the T'ang dynasty. The alternations of grandeur and decadence, wealth and poverty throughout this long dynasty are reflected in the various aspects of the literary work of the period. Three great poets mark the steps of an evolution from pure, lyrical poetry to polemical, involved poetry: Li Po and Po Chu-i at the two extremes and Tu-Fu in the middle.

Li Po and Tu Fu represent the two aspects of poetry at the time of the T'ang splendour. The first sang the praises of the brilliant reign of Hsuan-tsung, while the second interpreted the price of its greatness.

Li Po (or Li T'ai-po) lived from 701 to 762 and was the sort of Bohemian whose Taoist penchant made the spontaneity of his temperament burst forth; his motto might well have been the 'carpe diem' of Horace. Impetuous or downhearted, sad or exalted, he expresses in a few short sentences the impression of a moment; poems of this sort to some extent echo the Japanese *haiku*:

I saw the moonlight before my couch,
And wondered if it were not the frost on the ground.
I raised my head and looked out on the mountain moon;
I bowed my head and thought of my far-off home.

(‘On a quiet night’, trans. Sh. Obata)

With his capacity for freeing himself from the bonds of metre in his songs and ballads, he immortalizes the Imperial favourite Yang Hueu-fei, glorifies the wives of Yueh and wine, and weeps over famous ruins and his own wretchedness. Tu Fu (712-70) was of more modest origins than Li Po and was not a court poet. He knew all the vicissitudes of a modest employee during the dramatic events of the reign of Hsuan-tsung. Sensitive to suffering, he fought against war and social injustice, but, in his wisdom, did not forget the relaxation of happy moments and the value of gaiety and humour.

The dignitaries are promoted one by one up and up, the
Honorable professor alone is forgotten.
In the many mansions they feast on choice meats, the
Honorable professor has not enough rice to eat . . .

Let us not sadden ourselves with this sort of talk, so
 Long as we are alive and can meet let us drink the cup.
 (trans. W. Hung)

Po Chu-i, or Po lo-t'ien, (772–846) followed the inspiration of Tu Fu and goes even further in considering that literature should express and guide feelings so that the government should have a better knowledge of the thoughts of the people. Thus, he devotes himself to social problems, with a penchant for the benefits of Ch'an meditation.

Can it be that it is a bad thing to become too well?
 It seems that when people are quite well there is too
 much 'self' in their system.

(trans. A. Waley)

The three great ones of T'ang poetry should not lead us to forget the thousands who were then giving examples of all the genres in fashion. The anthology of the T'ang poets, compiled in the eighteenth century, contains 48,900 poems by 2,300 poets, including Wang Wei (699–759), a lettered aesthete whose descriptive landscapes bring out his qualities as a poet, musician and painter, Tu Mu (803–52) who adroitly mixes prose and verse in a *fu* medley, and Wen Ting-yun (c. 860) whose voluptuous and suggestive verses are a good illustration of the *tz'u* genre.

The end of the T'angs and the epoch of the Five Dynasties saw a return to precious forms and a superficial style (*Hsi-k'un-ti*), with an antiquated elegance taking over at the expense of clarity of expression both in prose and poetry. Numerous writers realized this, and as from the ninth century there began the *ku-wen*, or old style, movement. Han Yu (768–824), a fervent Confucian, preached the return to true prose, recommending that the parallelism (*p'ien-wen*) dear to the authors of the Six Dynasties should be used only occasionally. He vigorously attacked the *kin wen* (new style) evolved by recent theorists, the unwieldy prosodic system of which made severe demands, whereas the *ku wen* left free the choice of the number of verses and the rhyming system. The social climate, once again shattered by the revolts of Ngan Lu-shan (eighth century) was more favourable to a renewal of the traditions of the troubled periods. Poetry developed doubtful, even scabrous, forms, while prose was poured out in narratives where morals had very little place. It fell to the Song poets, and particularly Gu-yang Hsiu and Su Shih, to take up the great tradition again by finishing the work of Tu Mu, writing poetical prose (*Wen-fu*), re-discovering the lyrical inspiration of the old antique forms (*sao*) and confirming the divorce of poetry from music in the composition of the *tz'u*.

Gu-yang Hsiu (1037–72), a great scholar, republished the works of Han Yu and conferred upon them their titles of nobility. Like his senior, he was in favour of a return to Confucian orthodoxy and held out for the old style (*ku*

wen), the pre-eminence of which over the bombastic style of the *p'ien wen*, henceforth reserved to the drafting of official documents, he ensured.

Su Shih, or Su Tung-p'o (1037-1101), was the most illustrious poet of the epoch, and undoubtedly one of the greatest Chinese writers. He revived ancient *fu*, particularly in his famous poem 'The Red Cliff'. Opposing the lyrical and erotic Li Yung (c. 1045), he considerably extended the possibilities of the *tz'u* genre. However, he was the only one to use his style; after him, the genre resumed its traditional form, as is illustrated by Chou Pang-yen (1057-1121) and the poetess Li Ching-chao (1081-1140). The ancient genre of poetry (*shih*) also counted numerous adepts who followed the example of the great master Huang T'ing-chien (1045-1105).

B. The Chinese Novel and the Extraneous Literatures

The great event of the twelfth and thirteenth centuries was the appearance of the novel in the vernacular (*pai-hua*) and of the theatre. As far back as the T'ang dynasty, religious stories had been used as models by certain lay story-tellers, but under the Sung dynasty real texts in the vernacular appeared: voyages to hell or imaginary biographies, and above all story-tellers' text-books (*hua-jen*), romanticized histories and fantastic voyages such as that of Hsuan-tsang to India and the *Ta T'ang San-tsang fa-shih ch'u ching chi*, the prototype of the Ming novel entitled *Hsi yu chi*. Under the Yuans there appeared two of the greatest novels, the *Three Kingdoms* (*San Kuo che*) and the *Water Margin* (*Shui hu chuan*) both of which emerged from a long-standing oral tradition.

The first recalled the civil war of the second and third centuries, and the characters in it have become heroes more popular in China than the three musketeers of Dumas or the knights of Walter Scott.

The *Shui hu chuan*, a story of a band of brigands, first came out under the Yuans, but its influence only became felt through the much richer versions of the Ming dynasty, whose spirit it certainly reflects better.

Concurrently with the popularization and standardization of legendary and historical heroes, there came the beginnings of the theatre. As from the time of the T'ang dynasty, and particularly under the Sung dynasty, sung ballets (*tsa-chu*), the marionette theatres and the shadow theatre had been widely known. There is no doubt that their rich repertoires served as a source for the first dramatic authors. The *tsa-chu* consisted of four acts and was adapted as such by the Yuans, although the interest of the plot replaced that of the artists' performance. In this new genre, a considerable part was played by songs which were half spoken and half sung such as the *tz'u* of 'Butterfly loves flowers' (*tieh lien-hua*) and the Medleys (*chu-kung tiao*). A simple variant of the *tz'u*, the *san ch'u*, composed the sung part, which always remained on the same note. When China was cut in two, there appeared among the Sung dynasty of the South a different theatre (*nan hsi*) in which the plays, instead of having four consecutive acts (*chih*) and an additional act (*hsieh tz'u*), had an indeterminate number of them, while the sung part was no longer a solo but could be executed

as a duet, and was no longer reserved to the leading part. These features were maintained under the Mings.

Until the fifteenth century when the indigenous alphabet was invented, Korean literature, apart from folk songs (*Hyang-ga*), was essentially Chinese. The study of Buddhistic works led to the compiling, in 1251, of the great collection of the *Tripitaka* (Korean). The story (*Seo-gi*) of the Baegje, begun by Go Heung in 375, was continued by following the Chinese example. As from the sixth century a major exchange of artists was carried on between southern China and the Korea of Silla, but it was only in the middle of the Koryo period (twelfth-thirteenth centuries) that Korean literature in the Chinese language was in full flower with poets such as O Se-jae (about 1180), a specialist of *fu* (*bu*); authors such as Yun gwan and Jeong Ji-sang in the twelfth century, and Yi In-ro, Yi Gyu-bo and Choe Ja in the thirteenth. The fourteenth century was to witness the revival of Confucian literature with writers such as Yi Je-lyeou (1287-1367) and Yi Sung-in (1347-92). The Chinese influence of the Sung dynasty, and particularly that of Su Shih and Ou-yang Hsiu, was only to make itself felt at the beginning of the Yi dynasty in the fifteenth century (cf. Vol. IV).

In spite of the mould of the Chinese language, Korean literature was able to express its own cares and feelings. The influence of the writers of the Six Dynasties and of the T'angs remained noticeable until the end of the thirteenth century. It was at this epoch—with a time lag of three centuries—that Korea was subjected to the decisive influence of the Sung dynasty, particularly that of Su Shih, at the very time when she was attempting to forge a national mode of expression.

Japanese literary expression was based in the first instance on the story-tellers (*Kataribe*) who related ancient legends. The adoption of Chinese writing led to the formation of a corps of scribes (*fumibe*) who drafted administrative reports, personal diaries, memoranda and communiqués in Chinese, but do not appear to have taken an interest in the transcription of works.

It was at the epoch of Nara that writing transcended the administrative sphere and invaded the public domain by being used for the compilation of historical annals (*Teiki*). Chinese examples of dynastic annals and geographical descriptions gave rise to the drafting of local monograms (*fudoki*); the text, written in Chinese, tells of happenings and customs and is presented as a series of legends related by professional story-tellers. In the same way, impregnated with a concern for imperial legitimation and mythological explanation, the *Kojiki* and the *Nihon Shokki* (720) were written; the former would appear to be a more partial and less objective rendering than the second. These publications of historical documents are carried on until the end of the ninth century. At that time, literary expression as such was the business of poetry. The latter already appeared in the annals in the form of old songs, the lines of which had from four to seven syllables; but Chinese influence, which was then several centuries old, made itself felt and ensured that

lines with five to seven characters predominated. In 751, there appeared the *Kaifuso*, a collection of Chinese poems compiled on the order of the emperor, which reveals the increasing contribution made by Chinese literature. At that epoch, the Chinese poets most in vogue were Li Po and Tu Fu. Japanese poets remained more sensitive to form and sentimental impressions than to the social and didactic content. They accepted new symbols such as the plum tree, the moon and the wind. Metre was more difficult to respect owing to the absence of tonality, but undoubtedly rhyme played a considerable part as in the case of the Chinese quatrains of seven characters, in fixing the rules of the short poem (*tanka*). As opposed to the latter there was the long poem (*choka*), which was little used, and the ultra-short poems of three lines (*katanga*) or thirty-six syllables (*sedoka*). Whereas the musicality of the Chinese poem was disappearing, the Japanese poet was fond of intellectual resonance: a bedside word (*makura-no-kotoba*) used to introduce the poem by an epithet, gives a sentimental tone to the rest; a pivot word (*kake-kotoba*) should be understood in two ways—with what precedes it and with what follows it.

In the middle of the eighth century there appeared a collection of poems—the Anthology of Myriads of Years (*Man-yoshū*)—containing 4,500 poems by 491 poets and 70 poetesses; of these, 4,170 are short pieces (*tanka*). Most of these poems are inspired by love or the beauties of nature. The words are always evocative, and the emotion situated in a given season; the subjects are varied and are sometimes derived from prosaic ideas or commonplace objects. Although the Chinese language had always been considered foreign, the Chinese poems provide a valuable means of expressing Japanese sensitivity, and it was in Chinese that Yamabe-no-Akahoto wrote the first lyrical poetry known in Japan. The difference in the two languages, however, led to metrical rectifications, and Fujiwara Hamanari (724–90), like the Chinese Hung (about 500), listed the seven defects which poetry ought to avoid. The poetic vein was not entirely absorbed by Chinese poems, for another poetic genre, that of the *Noritos*, included poems with a majestic rhythm. At the end of the eighth century, the transfer of the capital of Kyoto marked the beginning of a new era during which the Chinese influence of the T'ang dynasty was accentuated. Anthologies succeeded one another—in 814, 817 and 827—such as the *Bunkakushureishu*, which is based on the *Wen-hsiuan* of the Chinese prince Hasiao T'ung (sixth century). But while the collections of thousands of poems bear witness to the extreme refinement of the Japanese in impressions and the search for form, they also betray his lack of interest for wider visions. Undoubtedly the Chinese mantle seemed heavy to bear. Finally, in the middle of the ninth century, the adoption of the alphabet (*kana*) made possible the evolution of a national poetry in indigenous syllabary. The greatest poet in this field was undoubtedly Ariwara-no-Narihira (825–80) with his poems full of emotions often bound up with sentiments suggested by the seasons. In 905, the emperor founded a 'Poetry Office (*Wakadokoro*)' and had all the finest works illustrating the refinement of the Fujiwaras assembled in a *Collection*

of Japanese Poems of Yesterday and Today (*Kokinwakashi* or *Kokinshū*). Naturally, certain slight influences of Chinese poetry may be found there, but Japanese sensitivity deploys rich personal means of expressing them.

Although the poets adopted the syllabary, the prose-makers rebelled against it, and writers in general found it repugnant to abandon Chinese. It was only in the tenth century that the first story in Japanese prose—the 'Story of the Bamboo Cutter (*Taketori monogatari*)'—appeared. This was the first in a series of the *monogataris*—tales, novels and novelettes which constituted the genre of prose par excellence of the Japanese literature of the Middle Ages.

But it was above all the ladies of the Court who were keenest to adopt the syllabaries, for in spite of their advanced education they were less well-versed in Chinese than the men. Two women authors thus immortalized themselves on the threshold of the last millennium: Sei Shonagon and Murasaki Shikibu. The former, in her *Bedside Notes* (*Makura-no-soshi*) reports little things she has seen or heard, funny and other scenes, thus inaugurating the genre of essays 'flowing off the end of the pen', or rather the end of the brush (*zuihitsu*). The second left behind her a novel fifty-four chapters long, the *Novel of Genji* (*Genji monogatari*) which traces the love life of a young noble of the court. It is the description of morals which is chiefly of interest to a present-day reader—scenes from the life of the nobles, or from the no less restless lives of the poets, as in the *Ise Monogatari* (based on the poems of Aribara-no-arihira), or from the lives of aristocratic women, as in the *Ochibuko monogatari*. The classic period of Heian, then, was rendered illustrious by the creation of three basic forms of art: the diary, the essay and the novel. The troubles which marked the end of this epoch saw the rise to power of numerous lords avid of autonomy and power, the search for the causes of this phenomenon involved some authors in retracing recent history. Thus was born the first historical panorama of the years covering the ninth, tenth and eleventh centuries: the *Eiga monogatari*, which was to be followed by many epic narratives. Concurrently, the increase of Buddhist missionary efforts contributed to the collection of fables, apologetics and parables; the best example of this type is provided by the *Konjaku monogatari* (about 1128–30) which assembles Indian, Chinese and Japanese stories.

The establishment of the dictatorship of the Shogunate of Kamakura initiated a new intellectual climate. The painful circumstances which artists had just experienced encouraged them to leave impressions aside (*mono-no-aware*) and try to discover hidden truths, and the indivisible method (*yugen*). The new poetical trends clearly appear in the new *Collection of Poetry of Yesterday and Today* (*Shin Kokinshū*). The prevalent form of thirty-one syllables was still denser than formerly, and the caesura is distinctly characterized. In certain poems, such as those of Saigyo (1118–90), the Buddhistic influence is clearly discernible. Minds were then concerned with understanding their epoch. In spite of the efforts of Teike (Sadaie, 1162–1241) and in spite of the flood of poems by two writers or tied poems (*renga*), poetry under-

went a very distinct disaffection. Fashion inclined rather to historical narratives, the description of intrigues and uprisings, the analysis of the complex relations between the feudal lords and their relatives and allies, and reminders of the uncertain fate of the soldier. The low level of culture of the samurai or peasant audience demanded a simple, vivid and colourful style, allowing of the insertion of moral reflections and subjects reminiscent of the conflict of duties. There then appeared successively the great epics: the *Hogen monogatari*, recalling the years 1156–8, the *Heiji monogatari*, tracing the steps of the 1259 revolt (brilliantly illustrated by a thirteenth-century painter), and the *Heike monogatari*, telling of the end of the Taira clan. In the same way, Buddhist story tellers collected accounts of miraculous apparitions, wrote the biographies of eminent clerics, and inserted into their works all sorts of thoughts and maxims, as did Kamono-Nagaakira (Chomei, 1155–1216) in his *Notes from the Ten-foot Square Hut (Hajoki)* in which accounts of misfortunes, descriptions of the countryside and personal reflections succeed one another. This work, which is in the tradition of the ‘writing flowing off the end of the brush (*zuihitsu*)’, foreshadows the work of Yoshida Kenko (1282–1350), the famous *Harvest of Leisure (Tsurezureguz)* a collection of amusing stories and profound reflections very characteristic of the humanism of that century. The general depression which marks this epoch is evidenced in literature both by a search for new forms of expression dear to the military nobility and by a concern for aristocratic conservatism appropriate to the nobility of the court—and this antagonism was to last till the nineteenth century.

2. INDIA

The Gupta age marked a culminating point in literature, as in other fields. It will suffice to remember the names of Kālidāsa, considered to be the greatest poet in the Sanskrit language, Śūdraka, author of *Mṛicehakatika* (*The Little Clay Cart*), and Viśākhadatta, author of *Mudrā-Rakṣasa* (*The Minister's Signet Ring*).

Although there were subsequently a great number of brilliant works written in Sanskrit, there was scarcely any renovation of its forms of words. A few original works inspired by contemporary happenings were written in Prākrit: the epic once again flourished in India, and the tragic events which convulsed northern India provided only too many themes for it.

Alongside Tamil literature, which already had a long career behind it by the beginning of the Middle Ages, a place must be found for works written in Telugu and Kannada. At long last, the Indo-Aryan vernaculars raised themselves to the rank of literary languages.

But mention should also be made, no matter how briefly of the literature of colonial India, and particularly that of Tibet of which a few specimens were given in connection with Buddhism, that of Burma, which was also of Buddhist inspiration, and the extensive Indo-Javanese literature, since unfortunately

nothing remains to us of ancient Khmer literature apart from the inscriptions.

A. Literature in Sanskrit

Mention has already been made of religious Sanskrit literature. We shall here confine ourselves to a study of the secular literature, which continued to distinguish itself brilliantly. The rules of poetry and the origin of its emotive power were increasingly the concern of the theorists, and in addition to poems which are often excessively florid and therefore difficult to appreciate the epoch offers us reflections on the nature of poetry, the interest of which often surpasses that of the works which gave rise to them.

Aesthetic Literature (alaṅkārasāstra)

These works of research are relatively ancient, but the history of the constitution of the various theories is difficult to determine for lack of a chronology.

The oldest—and the one which gave its name to *alaṅkārasāstra*—is undoubtedly that of decoration or ‘ornamentation (*alaṅkāra*)’. Based on an analytical conception of aesthetic pleasure, this school attempts to analyse the jewels with which literary beauty is adorned. Each ornament, image or sound effect gives rise to a distinct pleasure, and the delight provided by poetical works is the sum of these elementary pleasures. Poets as eminent as Dandin and Bhāmaha were protagonists of this theory. The study of ‘styles (*rīti*)’ deals with the way in which sounds and images are arranged, and is more synthetic.

The most imaginative theories have been propounded regarding dramatic art. There is astonishment at the strange emotive power of literature and an attempt to explain it. The notion of *rasa* is already presented in the *Bharat Nātyasāstra*—a work which may date from the first centuries of the present era but which was much commented upon in the Middle Ages and which examines all techniques having any sort of relation with the theatre, such as dancing, music, singing and, of course poetry. *Rasa* is the ‘zest’ of a work, a verse or even a passage of prose—the actual ‘pith’ which the author and, where the theatre is concerned, the actors attempt to insinuate into the sensitivity of the audience. Treatises enumerate the different sorts of *rasa* and the feeling which, by combining with one another, contribute to the constitution of *rasa*. They also apply to discovering the correct means of awakening the various *bhāvas* and *rasas*. In general a distinction is made between eight *rasas*—love, courage, loathing, anger, mirth, terror, pity, and surprise—to which are sometimes added serenity and affection. These basic states of mind are accompanied by thirty-three harmonics which communicate to them the variety of life.

The theory of *dhvani* (reverberation), which was grafted on to that of *rasa*, renders this research even more profound. It affirms the superiority of suggestions over clear expression and states that the essence of poetry resides in such power of suggestion. Incidentally, it is self-evident that various

suggested meanings can give rise to one another like a series of echoes replying to one another. Thus, the clear meaning of a poem surrounds itself with ever more distant and more indistinct haloes.

It may well be imagined that, under such conditions, it is possible to confuse poetry with versification: there is such a thing as prose poetry, and according to Vāmana it is this same prose poetry which is the touchstone of the true poet. Here, no formal element comes to the assistance of the writer, and the danger of prosaism is always present.

The Writers' Condition

Thus scholarly literature with its ornate style was traditionally held in great esteem in India. The writers enjoyed a high degree of consideration and a privileged social situation. To be sure, they often had difficulty in making a start, and the poets had to find a patron—often a long way from their country of origin. The Kāshmīri Bilhaṇa was a poet of the kings of Chedi and Anhilwāra before being received at the court of the Chālukyas of Kalyāṇi. Bhavabhūti, a southern Brāhmaṇa, had Yaśovarman of Kanauj as a patron. Bāṇa, a devotee of Brāhmaṇism, exalted the Buddhistic piety of Harsha, although in a very generous spirit of tolerance. The sovereigns themselves were often keen on writing poetry; it will suffice to recall the example of Harsha, or of Bhoja or Ajayarāja, who went as far as having dramatic works engraved in marble at Ajmer.

Thus, the great capitals became literary centres, as was the case with Kanauj and the Chālukyā capitals. The result was that certain regions were favoured. Whereas the Senas were exerting themselves to make a literary centre of Bengāl, the Pālas were more in favour of the Buddhistic universities and the religious arts. Gujarat was a centre of Jain literature, especially after the impulse provided by Hemachandra. But the most brilliant centre of Sanskrit literature, as from the end of the sixth century, was Kāshmīr. In order to demonstrate this, it will suffice to quote a few names, including that of the poet Dāmodaragupta, who was a minister in the eighth century. Under Avantivarman, in the middle of the ninth century, there lived Śivasvāmin, author of an epic of Buddhistic inspiration, Ratnākara Rājānaka, author of the *Victory of Hara (Śiva)* and Abhinanda, who summarized the *Kādambarī* of Bāṇa. The eleventh century was the century of Somadeva, author of *Kathā-Sarat-Sāgara (The Ocean of Rivers of Tales)*, of Bilhaṇa, and lastly of Kṣemendra, a vastly prolific author who tackled all types of poetry—epic, narrative, gnomic and religious—and wrote various treatises on poetics, metrics and politics. In the twelfth century there lived the poet Mankha, and Kalhaṇa, the greatest moralistic historian of India. There is an odd text which describes for us a literary meeting at Srinagar; the author reads his work at the house of his brother, who is a counsellor to the king of Kāshmīr, in the presence of the sovereign, notables, scholars and poets, one of whom is Kalhaṇa. This gives us a glimpse of what must have been the literary life of the epoch, the

conditions of creation, the emulation among writers, and the public whose favours they had to earn.

Evolution of Taste and Sensibility

At this point it is important to see in what way medieval works differed from those of the previous epoch, or in other words to trace the history of taste and sensibility, although not neglecting on that account the abundant documentation provided by the plastic arts, the evolution of which is at least as revealing as that of literature.

Whether we compare two representations of the recumbent Vishṇu, one of the Gupta epoch at Deogarh and the other from the beginning of the Middle Ages at Māvalipuram (Māmallapuram) (middle of seventh century) which is much more grandiose; two representations of Śiva dancing, one from the sixth century at cavern 14 at Ellorā, where the movement is still timid, and the other, from two centuries later, at Elephanta, where the dynamism has become more violent; two figurations of the myth of the lion-man destroying the ungodly (Pl. 31), the magnificent group in the cavern of the Avatārs and any other later example with inferior plastic qualities but designed to awaken fright and horror in the mind of the spectator; whether we compare the discreet sensuality of Ajantā, the more tender and somewhat more carnal love scenes of Aihole or Ellorā, and the shameless copulations of Khajurāho and Konārak, we cannot fail to be struck by the change in the effective tonality expressed by these works. Now, as Philippe Stern has already pointed out, an evolution of the same sort, though slightly different in its manifestations in view of the nature of the processes inherent in the two techniques, is apparent in literature, as concerns both form and substance.

This evolution appears to be bound up in some way with the desire to induce strong rather than subtle impressions in the sensibility of the reader or spectator. But the excessively liberal use of seasoning blunts the tastes; it may be said that the sensibility of the medieval epoch is more blasé than that of the Gupta epoch. This is one of the characteristics of civilizations which already have a brilliant past behind them.

This desire for expressionism is directly related to the *rasa* theory, although it results from an incorrect application of this notion. Thus it is that medieval writers often tended to make a wrong use of *Bhibhatsaeasa*, the *rasa* of the hateful. One would not encounter in Kālidāsa the sort of thing that more recent dramaturgists such as Harhsa or Bhavabhūti, from whom the following example is taken, rejoiced in: 'Having first torn off the skin bit by bit and devoured the swollen masses of the flesh of the shoulders, hips, back and so on, which were easy to reach and very evil-smelling, having looked all around him, with bared teeth, this beast of a ghost set about eating the rest, including the flesh adhering to the bones and the articulations of the skeleton which he placed in his lap.' Some descriptive narratives do not hesitate to give even longer descriptions, such as that of the cemetery in Kṣemendra's reshuffling

of the twenty-five vampire stories, which should be compared with the confused and disquieting atmosphere described by Somadeva in a more discreet but really much more effective way.

As for the *rasa* awoken by the mention of love (*Śringararasa*) to be sure this imbued the works of Kālidāsa, but there are vastly different ways of expressing it. Now the medieval authors do not always give proof of the same restraint as the author of the *Kumārasambhava*, but in this field, literature, no matter how shameless such a writer as Amaru may be, cannot compete with the excesses of sculpture.

We cannot fail to relate to the development of Tantrism this deterioration of taste and sensibility. This religious evolution undoubtedly exercised a certain influence on the development of Indian civilization generally. However, it is not sufficient to recognize it as a cause; it will also be as well to consider it as an aspect of a more general evolution. The fantastic, and at the same time frightening, atmosphere which imbued certain ceremonies merely accentuated the changes in sensibility which had previously favoured its blossoming. It will therefore be as well to consider the deteriorations of taste which manifested themselves in art and literature as the result of intrinsic ripening, partly independent of the historical context in all its aspects, particularly the ethnical and religious ones, for the same syndrome may be met with in other civilizations at other moments in history, as for example in Europe in the fifteenth century.

For the fact is that the most distinct features which we have thus far emphasized are surrounded by a whole host of more subtle symptoms which are sometimes little more than variants of the former but sometimes deserve a special examination. The ugly and the distorted appear in both literature and art. Let us deliberately take an example from non-Aryan literature; *Kāraikāl ammayār* describes turn and turn about, like the *Belle Heaulmière* of Villon, his former beauty and his present decrepitude. The anguish of old age and the obsession of death are related to the sense of human destiny of which the best authors give evidence on occasion. The abundance of suicides in the theatre, which sometimes reaches the point of the ridiculous should not make us forget either the suicides whose inscriptions have perpetuated their memory or the custom of the widow's throwing herself on to her husband's funeral pyre—a custom which is not laid down in any *dharma* treatise and which only began to spread in the Middle Ages.

So far as form is concerned, the desire to do better in the use of the *alankāras* resulted in verbal acrobatics which recall those of the 'great rhetoricians'—alambic images frequently with several meanings, and multiple, tedious alliterations. This even goes to the extent of writing verses containing only one consonant, and others which it is possible to read by taking the syllables not only in their normal order but also in reverse or in a zigzag. Literature is debased to the level of the cryptogram or calligram.

Indian taste chiefly favours verbal ambiguity, known in Sanskrit as *ślesa*.

The *Rāmapālacharita*, an epic poem of the eleventh century, simultaneously tells the story of Rāma and of Rāmapāla, king of Bengal, each verse being liable to interpretation as applying to either personality, owing to the diversity of the meanings of the words. The most famous example is the discourse of the messenger in Māgha's *Śiśupāla-Vadha* (*Slaying of Śiśupala*), which may be interpreted either as a peaceful statement or as a challenge full of hatred. Here is a verse from this long speech: 'What kings do not bow before you, you who have the brilliance of fire and the sun, who have complete self-control, whose acts are righteous and to whom all are subject?' or 'Why should kings bow before you, you whose strength is like that of a gnat caught in the fire, whose acts are an indication of your degradation and who are subject to all?' It is curious to see the plastic arts invaded by this taste for ambiguity; just as a compound Sanskrit word may sometimes be cut at two different points, a Paṭṭadakal figure can be interpreted in two different ways; there actually is 'coalescence', which is the meaning of the Sanskrit *sleṣa*.

Some historians have been very severe with regard to this development, particularly Indian writers desirous of criticizing their cultural heritage lucidly and without complacency. K. M. Panikkar, for example, says of Bāṇa that he gives evidence of a 'depravity of taste which is even more striking in the case of authors such as Māgha and Śrīharhsa'. Undoubtedly, the admirable point of balance which makes the Gupta works a pinnacle of human creativity had been passed. And yet, it was this very evolution which we are here condemning—though in its beginnings—which made possible the sense of dignity and majesty which was expressed, for example, at Māmallapuram (the young Brahman carrying holy water, the recumbent Vishṇu), in the restrained or cheerful dynamism of the cavern of the Avatārs, the dancing Śivas and flying genii of Aihole, and in literature the beauty of the dramas of Bhavabhūti.

The Literary Genres

The theatre. As in the previous epoch, the theatre enjoyed particular favour. It was meant for a refined public and was the genre which the sovereigns themselves practised for preference; king Harshavardhana of Kanauj composed three theatrical works and subsequently Bhoja of Dhārā, Vigraharāja IV of Ajmer, and others, imitated this example.

Two of Harsha's works are harem comedies of no great originality, but well contrived in an agreeable style. Quite different is the *Nāgānanda*, (*Joy of the Serpents*), which is one of the most curious plays in the entire Indian repertory; it begins in the manner of a comedy of manners, though spiced with a touch of the supernatural, but the end, taken from Buddhistic legend, is imbued with a *rasa* of a rarer sort—that of the heroism of self-sacrifice; the desire for sacrifice of the hero of the play saves the snakes which are due to be devoured by the mythical bird Garuḍa and converts Garuḍa himself to non-violence. Some scenes reach a height of true pathos, while others are spoilt by excess.

A hundred years later, in the second quarter of the eighth century, there lived at the court of Kanauj a great dramaturgist, Bhavabhūti, author of two plays on Rāma and of *Mālatīmādhava*, a love drama. The scholarly art of Bhavabhūti makes use, more discreetly than did that of Kālidāsa, of 'ornaments' (assonances and compound words), but with him the rhetoric still remains at the service of the work, whereas after him it too often became an end in itself. The love of pathos increased the dramatic tension, and it was not without cause that the theatre of Shakespeare and the romantic drama has been mentioned in connection with *Mālatīmādhava*. Of the two plays based on the legend of Rāma, *Uttararāmacharita* (*The Later Deeds of Rama*) is the better example; the character of Rāma, torn between love and duty, and that of Śitā, more unobtrusive but no less touching, attain an authentic grandeur. Here is part of one scene. Rāma who, for reasons of state, has repudiated his beloved wife Śitā, wanders through the forest, a prey to his grief, which is increased by the memories of former times called up by the environment. The hero is overcome by despair and falls down in a faint, whereupon Śitā, invisible, arrives and, seeing her husband on the ground, touches him with her hand:

Rāma: Ah, what is this?

Is it the sap which flows from the yellow sandalwood
Or the fluid which spurts out when you press the
buds of the moonbeams,
Or the essence of the reviving plants poured into
my heart and refreshing the scorched tree of my
life?

And yet . . .

Surely this is a touch which once was familiar,
Which revives my spirit and yet troubles it,
Dissipating in a moment the stupor which came from
my burning pain,
By joy it once again prolongs bewilderment.

Śitā: (*withdrawing suddenly and trembling*)

This is much too much for me!

Rāma: Ah, Śitā, my love!

Śitā: (*angrily and with a broken voice*)

My husband, your words do not comply with what has
happened.

(*Weeping*)

But why should I be hard as diamond and pitiless
to my husband,

He who, even in my other lives, I shall find it
unimaginable to see again,

He who, poor lost one, speaks so lovingly of me.
I know his heart and he knows mine . . .

Rāma: (Looking all around him in despair)

No, nothing there . . .

Sītā: Seeing him thus, he who left me without cause,

I know not what my heart decides!

Rāma: Queen,

Like the incarnate favour, thy contact still fresh
with tender perfume fills me with joy.
But where art thou, o source of joy?

Sītā: Heavy, no doubt, with tenderness whose unfathomable

depths they reveal,

draught of felicity,

heavenly potion,

such are the lamentations of my noble spouse.

I now have the proof that it was a great thing for

me to have been given existence, even though I

am transfixed by the arrow of unjustified desertion.

After Bhavabhūti, production remained abundant, but only a few names stand out: that of Murāri, imitator of Bhavabhūti; and that of Rājaśekhara, who lived at the end of the ninth century at the court of Pratihāra, less original, no doubt, but still highly esteemed, the author of several plays, including a comedy written in Prākrit throughout, which is of interest for its satirical aspect and the moral features which it reveals.

The bulk of the plays are based on the epic of *Rāmāyana* or *Mahābhārata* (*The Collection of Tresses of Bhaṭṭanarayna*) but there are also works on Krishna such as *Moonlight of the Cowherd's Game* by Rāmakṛishna of Gujarat (thirteenth century) and Śaivite ones.

A historical work should also mention the plays of historical inspiration: Bilhaṇa puts on the stage the love life of a Chalukya prince called Karṇadeva. In the thirteenth century, a priest in charge of a Gujarāt temple tells how two brothers defeated a Moslem chief and stopped the Moslem invasion—an interesting example of the revival of a literary genre by contemporary events.

To demonstrate the extreme variety of themes of the Indian theatre, mention should also be made of certain didactic and allegorical plays, the most famous of which is *Prabod'h Chandro'daya* (*The Moon of Intellect*) by Krishṇamiṣra disciple of Śankara in the eleventh century. This curious specimen of theological mentality portrays on the stage the conflicts between Aberration and Mind, both of which are children of the marriage between Being and Illusion.

Certain plays were written for the shadow theatre, similar to those which are still showing in southern India, South-east Asia and Indonesia; one writer of these was Aṅgada of Subhaṭa, who lived at the court of a king of Anhilwāra in the thirteenth century.

Numerous comical and satirical monologues, vivid and mordant at first, and more conventional subsequently, and farces, the most venerable of which is

attributed to a Pallava king of the seventh century, complete the picture of the works which have come down to us.

In conclusion, it is as well to point out how unjust it would be to assess, from a purely literary point of view, certain plays which were half-way to being ballets. All these dramas cannot have been thought out without a knowledgeable art of stage management which, incidentally, had an influence on the composition of mural frescoes in painting. Let this at least be the occasion for mentioning, since one cannot do more, two important arts concerning which certain information may be gleaned from plastic figurations and literary texts—music and dancing, the present modes of expression of which may claim a millenary tradition.

Lyrical poetry of epic inspiration. Conventional lyricism, known in Sanskrit as *Mahākāvya*, continued, after Kālidāsa, to produce excellent works, although they were a long way from the level of perfection attained in the *Raghuvamśa* and the *Kumārasambhava*. For there were two dangers which menaced poetry after this wonderful peak of achievement: an excess of virtuosity and increasing adherence to the rules of literary composition.

Bhāravi, named alongside Kālidāsa in an Aihole inscription dated 643, may belong to the sixth century. He drew his inspiration from the *Mahābhārata* to describe the fight between Siva, disguised as a mountain-dweller, and Arjuna in *Kirātāorjuniya*. The style, in spite of a tendency towards preciousness, is often concise: Bhāravi, who could not resist the pleasure of displaying all the resources of his art, limits this demonstration to a song of his poem.

At the end of the seventh century and the beginning of the eighth, Māgha imitated Bhāravi in *Śisupāla-vadha* (*Slaying of Śisupāla*), which was also inspired by the *Mahābhārata*. The descriptions are more conventional, and the poet indulges in scholarly calligrams, presenting his stanzas in various geometrical designs. This excessive technical ability and ingenuity, in which we discern a tendency towards bad taste, in spite of the freshness and vividness of certain notations, were nevertheless considered as the *ne plus ultra* of lyrical poetry in India. Bhaṭṭī's *Bhatti-Kāvya* (*Murder of Rāvana*) probably dates from the sixth or seventh century. It has a didactic as well as a poetical aim—that of illustrating the rules of grammar and rhetoric.

As from the ninth century, the number of great lyrical poems increased. Only two are worth mentioning: the Story of Śrikantha by the Kāshmiri poet Maikha, which is extremely difficult, but above all a rearrangement of the graceful episodes of Nala and Damayantī, composed in the twelfth century by Śriharsha, court poet of a king of Kanauj.

Already with Bhāravi and Māgha, conventional descriptions of nature—of rivers, the seasons, the forest, sunrise and sunset—occupied an important place at the expense of the story told; in any case, the ‘plot’ of all these poems was simple and well known to the public. Śriharsa went even further than his forerunners, and did not hesitate to work into his poem philosophical and

technical expositions, thus giving proof of his vast erudition rather than trying to dissimulate it. The result is that opinions regarding this poem vary considerably according to the taste of the reader.

The Middle Ages also produced a number of historical poems, with which it is as well to compare the inscriptions in praise of the sovereigns, which are written in an obscure and emphatic style, though one which is not always devoid of grandeur. In particular, the inscriptions are all that remains of ancient Khmer literature, and in spite of the conventions one sometimes feels that they are inspired by an authentic epic feeling of legitimate national pride.

We must include in this genre *Harsha-Charita* (*Deeds of Harsha*), although it is written in prose. This work, in some of its aspects, comes near to the conception of the historical novel. It describes scenes in court life and battles, and even work in the fields and school life. But the sovereign's career is immersed in a fiction which has nothing to do with history. The style has the qualities and defects of the poetry of the period: stylistic research, particularly in the case of Bāṇā, takes the form of a predilection for excessive compounds.

Many of these works have now disappeared, such as the history of Kāshmīr by Kśemendra, which was one of the sources of Kalhana, but of those which remain three are distinguished for different reasons. Vākpatirāja, a protégé of Yaśovarman of Kanauj (middle of eighth century) composed in Mahārāstri Prākrit a poem devoted to the conquest of Bengāl by his patron, called the 'Slaying of (the King of) Bengāl' (*Gaudavadha*). This poem, which may be unfinished, is one of the best in its genre.

At the end of the eleventh century, the Kāshmīri Bilhana who, in the last canticle of his poem, described his province and his native village, took service with the Chalukya Vikramāditya VI, whose glories he set about singing. Here again, historical truth has assuredly been ill-treated, but the literary value of the work is far from negligible. Last but by no means least, 'River of the Kings (of Kāshmīr) (*Rājatarāṅgina*)' by Kalhana, terminated in 1149, is the most important historical work ever produced in India. This time, the legendary element is reduced to a minimum. The author borrows his documentation from various sources, including inscriptions which have disappeared today. In dealing with the contemporary epoch (Book VIII, which is as fully developed as the preceding seven put together), he observes and relates facts as an inquisitive and critical chronicler. As a moralist, he takes an interest in economic, social and political life, and his work constitutes the best approach to the life of medieval India from all its aspects. It is packed full of concrete details, and the information is reliable, at least as from the beginning of the seventh century. The language is comparatively simple and direct, although this does not prevent it from being elegant, expressive and even colourful. The style varies according to circumstances, simple and straightforward, or noble and serious, easily mingled with humour, some of it trivial, and also on occasion, when the subject lends itself to such treatment, emphatic in accordance with Indian taste.

The short lyric and gnomic poetry. The short lyric, more modest than the conventional lyric, is usually to be found in collections of fifty to a hundred finely worked verses, each of which is a complete unity. It is in these verses, often collected in anthologies, and in those with which the dramatic authors enamel their works, that the Indians contrived to quintessentialize poetry.

In this genre may be included the collection of verses attributed to Bhartṛhari (seventh century?). Three sets of a hundred verses are devoted to love, practical life and renunciation respectively. Only the first set, therefore, are lyrical in the true sense of the word, and even love is discussed in a disillusioned manner which paves the road to detachment. The two others have more to do with morality or even, in the case of the last, religious poetry. Many of these stanzas are sheer jewels; it will be as well to quote a few of them:

She of whom I think unceasingly has nothing but indifference
for me; she desires someone else who bestows his love elsewhere,
while yet another puts her joy in me. Unhappiness for her, for
him, for love and the other one—and also for me.

We did not make love; love passed through us. We did not exercise
penitence; we submitted to it. Time has not passed away; it is we
who are passing away. Desire has not grown old; it is we who
are ageing.

The body shrivels up, the legs become unsteady, the teeth fall
out, the sight becomes dim, deafness increases, the saliva becomes
excessive, parents don't realize what they say, and the wife no
longer obeys. Unhappy the man who grows old. His very son becomes
his enemy.

Should we live in mortification near the Ganges? Should we wisely pay
court to the noble lady? Should we drink at the fount of knowledge
or of the nectar of poetry? Life lasts but a few moments. And we do not
know what we ought to do.

The two most famous collections of love poetry are *Chaura Panchas* (*The Fifty Stanzas of the Thief [of Love]*), by the Kāshmiri Bilhana and the hundred
verses of Amaru (perhaps seventh century).

The first recalls the nostalgic and passionate memory of the joys of
clandestine love. The second describes with a light touch all the stages of
love, from the first emotion to the beginning of indifference, and including
the pain of absence and fits of short-lived anger:

In her anger, she held him tight between the tender
bonds of her arms, as agile as creepers; she drew him
to the pavilion of games, and there, in the presence
of her companions: 'Will you do it again?' she

stammered in a soft voice, referring to his fault . . .
 In his happiness, the lover allowed himself to be beaten,
 determined to deny all, and while she wept, he laughed.

The traveller's wife watched the road by which the lover had left until she lost sight of him; then, wearily, as the road grew dim at last light and darkness invaded it, she painfully took a step towards the house. Should he not be back by now? And, turning her head rapidly, she looked again. . . .

Frown as she may, her piercing look is full of desire.
 Let her retain her speech ne'er so much, her burning face
 allows a smile to appear. Let her heart be hard as granite,
 her skin begins to grow pale. When she sees the man she
 loves, how will her sulking finish?

Of the religious poems, the most famous is rightly the 'Grita-Grovinda, (Songs of the Cowherd)' by Jayadeva, who lived in Bengal in the twelfth century. This poem undoubtedly played an important part in the development of 'Krishna Bhakti'. It tells of the love of Krishna and Radhā, that is between God and the souls of the faithful. But the religious symbolism is the pretext for a description of secular love. The language is rich and varied, the metrics scholarly, and the work, which was designed to be sung to tunes the notation of which has been kept stands out from the ordinary run of Sanskrit on account of features which relate it to popular poetry, particularly where the use of rhyme is concerned.

Narrative literature. The Indian work which comes closest to our conception of the novel is *Daśaeurīvara Charita* (*The History of Ten Princes*) by Dandin (seventh century). This is an episodic tale in the style of the *Decameron*: ten young men tell of their adventures. The narratives are impregnated with marvels and intermingle complicated intrigues in which gamblers, courtesans and even hired assassins play a part. There is a flavour of the picaresque about them. The language, which is considered to be a model of Sanskrit prose, is difficult; long sentences with a complicated syntax are used, but there is no monotony, nor is there any lack of fantasy and charm.

Although not attaining the interest of Bāṇa's novel, the *Vāsavadattā* by Subhandu is not devoid of charm and enjoyed considerable popularity. But it is above all the *Kādambarī* of Bāṇa, the chronicler of Harsha, Vardhana of Kanauj, that has been considered as an unsurpassable masterpiece. The style is precious, and pompous passages contrast with others which are more straightforward and more charged with emotion. The complex plot makes it difficult to express love faithful throughout successive existences, as the poet wished.

From immemorial times, India has possessed a treasure of tales and fables on which everyone was free to draw. The two great collections entitled *The Five Treatises* (*Pañchatantra*) and *The Great Story* (*Brhatkathā*) continued to be greatly esteemed in the Middle Ages. The *Pañchatantra*, particularly, was distributed on a prodigious scale. It was translated into Pahlavi in the sixth century under Anūshirwān (531–79), and Shah Nameh celebrated as was only right this event of considerable importance for literature generally; the Pahlavi text, translated in turn into Syriac and Arabic (*Kātila wa Dimna*, by Ibnu'l-Muqaffac, c. 750) was at the origin of numerous versions in some fifty languages (Greek, Italian, Latin, German, Slav, Hebrew, Spanish, etc . . .). The Reineke Fuchs, the *Gesta Romanorum*, the *Fabliaux*, *La Fontaine* and the Grimm brothers are some of the many who owe a debt to the *Pañchatantra*.

In India itself, the *Pañchatantra* was subjected to a number of rearrangements, an adaptation into Kannada as from the eleventh century, and an adaptation into Javanese as from the twelfth. Incidentally, the fables of the *Pañchatantra* were known previously in South-east Asia.

But the most famous work inspired by the *Pañchatantra* was the *Hitopadeśa*, highly appreciated in India, which departs a long way from the original plan and which Al Biruni already knew at the beginning of the eleventh century through a Hindi version.

The *Brhatkathā*, which was also translated into Persian and Tamil, was at the origin of three important works, one found in Nepāl—the work of Budhasvāmin, and the two others the work of the Kāshmīri authors, Kśemendra and Somadeva. *Katha-sarit-sagara* (*The Ocean of Rivers of Stories*), by Somadeva is restrained and clear, unlike Kśemendra's book, which is florid and obscure. In the opinion of a connoisseur as experienced as Louis Renou, it was 'one of the successes of Indian art'.

Other narrative works, not so ancient or important as these two collections, appeared in the Middle Ages. *The Twenty-Five Tales of the Vampire* were included in their books by Kśemendra and Somadeva, but there are also independent recensions of them: twenty-four tales, to which should be added the framework narrative, are told to king Vikramāditya, hero of many legends who appears here under a slightly different name, by a *Vetāla* (vampire is not a very satisfactory translation); they end with a question to which the king has to reply. *The Thirty-Two Tales of the Throne*, which are more moralizing and monotonous, exalt the generosity and virtues of the same king, whose wisdom was demonstrated in the above-named work. In *The Seventy Stories of the Parrot*—a work translated into Persian under the title *Tuti Nāmeh* (fourteenth century)—a parrot succeeds in preventing a young wife from going to a clandestine rendezvous during her husband's absence, by pretending to complete her education as an unfaithful wife. With this end in view, the parrot tells her a story, usually based on the theme of adultery, every evening at the time when she is about to go and meet her lover. This collection was very

widely distributed, and one of the episodes reappears—after goodness knows what vicissitudes—in Gottfried von Strassburg's *Tristan*.

B. Literature in Modern Indo-Aryan Languages

The appearance of the modern Indo-Aryan languages has already been examined in Chapter VI. We are not here concerned with the oldest documents written in these languages, but only with works having real literary value.

Since the beginning of the thirteenth century, Hindi produced two epic poems inspired by the exploits of Prithvirāj, king of Delhi, and his adversaries. Jaychand, king of Kanauj, wished to marry off his daughter and organized the traditional ceremony, during the course of which the bride has to choose her husband. But his daughter was in love with Prithvirāj, although she had never met him, for she was aware of his renown. Prithvirāj carried her away and fought against his father-in-law who, on the point of being beaten, called upon the Moslem king of Lahore to avenge his honour. Prithvirāj was beaten and put to death, and Delhi fell into the hands of the Moslems. This was the theme of the epic of *Chandi Bardāī* who is said to have participated in the disastrous battle of Tarain in 1192, but the work was considerably enlarged upon by generations of bards.

Another epic cycle revolving around the same events is that of Alha, the heroes of which are the two brothers Alha and Udal, who served Marmal of Mahoba, the ally of Jaychand of Kanauj. These poems are interesting because of the variety of subjects with which they deal and the description of the traditions and customs of those Rājputs who, though brave and warlike, were incapable of uniting against the Moslems.

In sharp contrast with this warlike literature, the literature of the Marāthi language affirmed its religious vocation from the very beginning. Mukundarāja probably lived at the end of the twelfth century, but the dates are contested and in any case his poetry is not exempt from a somewhat dry didactic content. On the other hand, the poetic commentary on the *Bhāgavad Gita*, which Jñāndev finished dictating in 1290, is distinguished both by the beauty of the language and by the profundity of the religious feeling. Let us, for example, take Jules Bloch's translation of the commentary on the verse of the *Gita* which states: 'Acts do not involve me: for I watch them as a stranger, divorced from these acts.'

Can a handful of salt stop the waves of the ocean
enraged by the wind?

Can a cage full of air call a halt to the hurricane
shrieking on high?

Will the rays of the sun allow darkness to penetrate
with its gloom?

No more than the mountain streams pierce through to
the heart of rocks
Am I touched by the work of Nature whose sole support
I am.
I am neutral. I take no action to shape or change
events.
As a lamp left in a room neither guides nor stops
the traveller,
So I, a mere spectator, think of family affairs.
I remain in the world, but have nothing to do with
acts.

The Bengāli language was used at an early date by Buddhistic authors, and some of the 'canticles and stanzas' by Haraprasād Shāstri discovered in Nepal may date from as far back as the tenth century. This Hermetic poetry is not without charm:

O Gipsy, thy shanty is outside the town. As thou
goest, thou minglest with Brahmans and Buddhists.
O Gipsy, I will unite myself with thee. Kanha is
a skull carrier, naked and without hate. . . .
Gipsy, sell me thy lute and thy basket. For thee
I abandon my player's baggage.
Thou art a gipsy, and I a skull carrier. For thee
I have taken the rosary of bones.
The gipsy eats the young stem of the lotus and
stirs up the pool. I strike the gipsy and take her life.

To assist interpretation of the above, it should be remembered that the gipsy (*dombi*) symbolizes universal vacuity in Buddhism.

There also existed in Bengāli an ancient popular literature about which we have little information, since it changed with the lapse of time.

As for Umāpati, he is not unanimously considered as a contemporary of Vidyāpati (fifteenth century). His poems in praise of Krishna, which have survived in Hindi after having been handed down orally for a long time, were probably written either in Bengāli or in a neighbouring dialect—the Maithili of the Sena epoch.

In the twelfth century, Jayadeva, the author of 'Songs of the Cowherd', mentions a Sanskrit poet named Umāpatidhara, who might well be none other than Umāpati.

Tamil Literature

In the year 500 Tamil literature already had a long history behind it. In spite of the considerable uncertainties of chronology, it can be affirmed that the epoch of the Third Academy (*Śaṅgam*, from the Sanskrit *Sangha*) terminated about the fourth century, but the two major themes of ancient poems—public and private life (*Agam* and *PuRam*) continued to inspire poets,

although with less success than during the previous epoch. Two collections among others that are of less interest, the *Purapporul* of AiyaNār-idaNār, which could belong to the seventh century, and the *Ahapporul* of Iraiyanār from the eighth century recall the poetry of the Tamil language which, although so attractive, is too little known outside India. It was at the time when the religious poetry which was discussed under the heading of religion (pp. 524-5) was developing that the court epic began to decline.

One of the most interesting aspects of Tamil literature is its richness in gnomics. There is a large number of collections of maxims, the most famous of which—the *Kural*—attributed to a weaver named Tiruvalluvar, is often vaunted as one of the masterpieces of world literature. The wisdom expressed in it, which conveys a certain Indian atmosphere, is marginal to religious beliefs. Certain commentaries try to explain it from a Hindu point of view, while others claim that the *Kural* was Jain, because it does not prescribe the adoration of a specific god, but the book, although deeply impregnated with religious spirit, is independent of any dogma and any confession. Its date is very uncertain. It is traditionally included with the Third Academy, but everything would indicate that it is situated chronologically between the fifth and seventh centuries.

These maxims are of such concision that it is quite possible to quote a few of them, but a translation cannot, of course, convey the poetry of the language:

For him who sits devotedly at the feet of Him who
has neither desire nor hate, there is never any affliction.

What seal can hide tenderness? A mist of tears betrays
him who loves.

Domestic life without love: the soul dries up like a
tree planted on a rock.

To give freely is a good thing, but to say tender words
with a smile is a better one.

Of course, the *Kural* is not the oldest of the Tamil collections of maxims. Numerous stanzas of *Nāladi-Nāmūru* are undoubtedly older. But many other collections are more recent and are distinguished by various characteristics, as for example the one attributed to a brother of Tiruvalluvar—the *Agava*—some of the poems of which have a revolutionary flavour; some verses from it have already been quoted above.

Narrative literature in the Tamil language is also traditionally with the *Sangam* but, in spite of archaic features, particularly where the language is concerned, recalling old Tamil, the most famous of these stories—‘*Silapadikāram* (The Jewelled Anklet)’ and the novel by *Manimēkhalai*—are certainly later than the third century and earlier than the eighth.

These words were briefly referred to in the previous volume. Let us see what they consisted of.

'The Jewelled Anklet', inspired from Jain sources, is the story of a merchant who sells a precious ring, which is recognized as being a jewel stolen from the Queen; the merchant is executed, but his wife, faithful to her husband in spite of his unfaithfulness, proves that there has been a legal error. The story of *Manimēkhalai*, which certain Tamil scholars consider to be of the second century, is not necessarily earlier than the 'The Jewelled Anklet' (of which, in any case it is a sequel), as some have claimed. This time, the inspiration is deliberately Buddhistic; it recounts the adventures of the young *Manimēkhalai*, daughter of the hero of the former story, and a dancer, who is pursued by a lover who remains persistent in spite of the nun's vestments which she finally adopts. The action, which is far less clear than in the 'The Jewelled Anklet', is interrupted by curious digressions from the subject in the style of adventure stories—sea voyages, shipwrecks, crimes, miracles, etc.

Other works are certainly later, such as *Sivaga-Śindāmani* (*The Jewel of Sivaga*), another Jain work which may have been inspired by a Sanskrit source, and the *Śūlāmani*. From an examination of these works it would appear that Sanskrit influence had become considerable at this epoch.

Up till now it has scarcely been possible to demonstrate the important part played by music in the elegant and refined society of India. Two short passages from 'The Jewelled Anklet' should suffice to rectify this omission:

'Then there was the master of the lute of the fourteen strings. In order to produce the seven *pālai* notes he would conjointly sound the respective strings in the lute, known as the *tāram*, and the *kural*, and bringing them to the central part of the lute he would tune the *kaikkilai* part of the instrument. Similarly, touching the other stout string on the *tāram* side and the other two slender strings on the *kural* and bringing them to the central part of the lute, he would tune the *vilari* part of the instrument.

'Then preceding from *ulai*, the most slender string, up to the *kaikkilai*, he would play upon all the fourteen strings and thus produce the *śempālai* note. In a definite order the notes would arise, e.g. *padumalaippālai* from *kaikkilai*, *śevvalippālai* from *tuttam*, *kōdippālai* from *tāram*, *vilarippālai* from *vilari*, *mērśempālai* from *ili*—thus are the combinations effected.

'After worshipping with her hands Mādavi removed the lute faultless in respect of *pattar*, *kōdu*, *āni* and strings, from its fancy-coverings, its body adorned with flowers, which looked like a beauteous bride with her black eyes darkened with collyrium. And she began to produce its eight different sounds, *pañnal*, *parivaṭṭanai*, *ārāidal*, *tavaral*, the majestic *śevalavu*, *vilaiyāṭtu*, *kaiyūl*, and the sweet *kurumpōkku*, in order to satisfy herself as to their correctness. Her lustrous little fingers ornamented with ruby rings manipulating the different strings resembled a hive of humming-bees. Next she tested by ear the eight different tunes, *vārdal*, *vadittal*, *undal*, *urāldal*, the fair *urutṭal*, *teruṭṭal*, *allal*, and the beautiful *paṭṭadai*.'

Kannada and Telugu Literature

The other Dravidian literatures, which are not so old or extensive as the Tamil, are nevertheless far from negligible.

Telugu literature may well go back a very long way; Nāgārjuna, the great Buddhist teacher, probably had texts translated into his mother tongue; but he who is considered as the greatest Telugu poet—Nannaya Bhaṭṭa—was the official poet of the Chālukya of Venigī (1022–63). Amongst other works, he translated the *Mahābhārata*. His language is cluttered with Sanskrit words, and subsequently Telugu literature generally suffered as a result of this influence, which prevented it from attaining authentic originality.

All in all, Kannada literature, in spite of the influence of Sanskrit literature, is less dependent on these models. It is regrettable that the most venerable work—the Chūḍāmani, which is probably earlier than the seventh century—has disappeared.

The oldest work remaining to us in the *Kavivāja mārga* (*Royal Road of Poets*), written at the court of King Nrpatuṅga (middle of ninth century). Many writers date back to the tenth century, including Pampa the Elder, who wrote a Jain *purāṇa* and an adaptation of the *Mahābhārata*. Pampa the Younger, in the twelfth century, is more original in his imitation of the *Rāmāyaṇa* from a Jain point of view. He too composed a Jain *purāṇa*. At the end of the same century, the first novel in Kannada, entitled *Lilāvatī*, was written in a mixture of prose and verse (*champu* style).

The most curious personality in all this literature was the founder of the Liṅgāyat sect—an author of sermons written in a very simple style with very little Sanskrit influence. These sermons (*vachanas*) are often impregnated with revolt and violence.

3. THE ARABIC WORLD

A. Syriac Literature

Writings in Syriac, the work of clerics, are primarily of religious importance, being the fruits of Jacobite inspiration or Nestorian obedience. From the fourth century onwards, and until quite a late date under Islamic rule, Syrians also engaged in the translation of the great intellectual and scientific works of Greece.

There are two compilations of the sixth century that have a bearing on the history of Byzantium and the Sassanids, and even of the West. One of these is attributed to Joshua the Stylite, the other is the ecclesiastical Chronicle of John of Ephesus, which ‘casts a major light on the last phases of the Christian-Pagan struggle by laying bare its cultural mainsprings’. It is, further, ‘of great importance for the political and psychological history of the Byzantine Empire in the sixth century, in particular as regards tracing the extension of Eastern

influences. In the course of his account, the author enters into all the details and minutiae of living, providing a wealth of documentation from which may be gleaned intimate knowledge of manners and customs, and of the archaeology of the period.' Annals which were set down in the twelfth and thirteenth centuries—principally the former—are major sources of information. Written in Syriac, by then no longer a spoken language, they are the assertion of a sort of pride. Michael the Syrian emerges from his *Chronicle of the World* a notable personality, of fine authoritative judgment.

Another *History of the Universe*, the work of Bar Hebraeus a hundred years later, contains little that is original save in its treatment of the thirteenth century. Bar Hebraeus was the last Syriac writer of the Jacobite persuasion. He also wrote commentaries to the Bible, Christian dogmatics, a Nomokanon (ecclesiastic law), treatises on ethics and Aristotelian philosophy, translations and adaptations of Avicenna, a Syriac grammar according to the methods of Arabic grammarians and—last but not least—a 'Book of Laughable Stories'. Ebedjesu, an ecclesiastical writer who died in 1318, is considered to be the last literary representative of the Nestorian Church. He wrote a *Paradise of Eden*, interesting only as a poor imitation of the Arab *Makamat*.

An Armenian literature really national in character was born as a result of the invention of an alphabet by Mesrop at the beginning of the fifth century. At this period, of course, it consisted mainly of translations from Greek to Syriac, and was productive chiefly of religious writings.

The first historical studies by Elisaeus Wardapet and by Moses of Khoren have a nationalist trend, exalting the patriotism of a nation whose history, prior to Moslem conquest, had been one long tale of tribulation, religious as well as national. Despite its prose-epic style, the work of Moses is unique as a source for the Sassanian period. It has a geographical chapter, moreover, based on a lost treatise by Pappus, which is essential for presenting the picture of Armenia and the surrounding area.

The work of these two is paralleled by that of Sebeos, a valuable informant concerning the Arab invasions, and of Thoma Artsruni, who brings his account up to the end of the ninth century. It should be noted, too, that it is in an Armenian translation that the work of Eusebius of Caesarea survived. For later periods there are the works of the historians Stephen Aslik, Gregory the Priest, Matthew of Edessa, the Constable Sempad, and Vartan.

The famous Gregory of Narek, 'the Pindar of Armenia, took holy orders at the end of his life, after writing at the age of twenty a commentary on the Song of Songs; he was responsible for sacred elegies, panegyrics, hymns, and a commentary on the Book of Job, all works entitling him to be ranked as one of the purest glories of Armenian literature.' (René Grousset.) Popular songs have survived from the kingdom of Sis, in the twelfth century, together with poems of a more literary kind on the Moslem capture of Edessa and the fall of Jerusalem. From these may be gathered some idea of the importance of the cultural society of little Armenia.

B. Arab Literature

Pre-Islamic Poetry

Before the advent of Islam, Arabia was, it has been said, a country without cultural antecedents—a pronouncement true enough if what is envisaged is science in the strict sense of the word. But, as those who make the assertion are aware, this period had its poetic production. It is poetry of a learned character, the work of writers in sure technical command, addressed to a cultivated audience who were able to appreciate its qualities. These poets are virtuosi, making skilful use of all the wealth of the language. It would seem that pre-Islamic stylistic prescriptions involved the inclusion of elements from the different tribal idioms, or what we should term *provincialisms*. The synonyms used to designate animals, for instance, represent special terms, drawn from a kind of linguistic tribal atlas. The poet produced a balanced combination of dialect words, and then sought the approval of what was bound to be a mixed audience, at the annual fairs that took place in the peninsula. These popular festive gatherings—we might call them truces of God—recall the panegyric assemblies in the course of which poems were also recited. These pre-Islamic verses are thus works which were awarded prizes at poetry festivals; their authors were declared poets laureate. It is not straining the simile to say that these lyric pieces had reverberations through the Arab world as wide as those caused by the poetry of Homer through Greek civilization. It is a poetry of a particular originality, still in many ways Bedouin, and to some extent aiming at depicting the nomadic life. Its prosody reached a pitch of technical excellence that set the days of initial stumbling experiment far back indeed. With the knowledge of Arab tradition, one can imagine the songs of camel-drivers in the early days, rhythmic encouragement for the caravan and a humanizing of the surrounding silence.

So wide was the public for this poetry that it was centuries before the Islamic poets could depart from the lines it laid down, and convention proved strong enough to keep the same themes in currency. Perhaps the bards were already showing greater intelligence and craftsmanship than personality. The conformism that constrained them to hold to precise rules was redeemed by concentration on rhythm and vocabulary.

Arabic Poetry

An Arabic ode consists of a series of little descriptive *tableaux*, more or less linked to a *leitmotiv* that may not be made immediately clear to the reader and is not an element of great importance. The poem is never really an entity, and enjoyment is a matter of appreciation of the parts. These consist of a series of simple lines, each of which must in a sense be complete in itself, with no enjambment; they are more easily distinguishable in recitation because each poem has a single rhyme continuously throughout. The aim of such pieces is given in *kasida*, the Arab word for them, which signifies praise of the tribe,

the denunciation of enemies, praise of a person or a family, and the anticipation of, or request for, a reward.

The initial theme is the melancholy recall of places that have been the scene of some amorous embrace, whence the poet proceeds to the urgency of his passion, the sufferings of separation, and the magnitude of his tenderness and desire. Several lines are given to the enumeration of the moral and physical qualities of the beloved, often running into minute analysis; it is on the whole unenlivening, and so conventional as to be impersonal. The remembrance of his rendezvous is seized upon by the poet as a chance to expatriate on his steed, his horse, or his camel.

Among the pre-Islamic poems seven stand out which have been considered masterpieces and are known in consequence as the *Mu'allakat*, the 'Suspended'. They are odes, almost all in praise of the love of women, and revealing a fervent love of nature. What is striking is the absence of religious sentiment; not a note recalls either animistic cults or the deification of the forces of nature. Here is man confronting the elements, often hostile, in which lies inexorable necessity.

These wandering pre-Islamic poets, like heroic brigands, move us by their sincerity, their note of truth. Their work is expressive of the solitude of the desert: one hears the cries of the beasts, and sees the colours of the sand, the contours of the terrain, the changing skies. One comes sometimes on lines charged with sharp-felt sorrow, but never on lugubrious sentimentalism. These are men of toughness and resilience, who knew how to appreciate life's joys.

They also sing of collective everyday life. Their poetry is of all times and all places, bound up in universal ideas. It may also be termed the poetry of danger; these are people for whom acceptance of peril does not mean the underestimation of it, and their songs sound the note needed to raise the morale of a caravan in trouble.

As is the case with so many other nations, the first poetry of the Arab civilization was recited, not written. The poems were eventually written down by two rhapsodists, Hammad Rawiya, of somewhat doubtful reliability, and his rival, Mufaddal Dabbi, reputedly erudite and conscientious. The rôle which these two played was a major one in the gathering and diffusion of knowledge of pre-Islamic poetry, and may be compared, on its own scale, with that accomplished for the Homeric poems by the intervention of Pisistratus.

Investigation has recently begun into the question of authenticity—an inquiry not without a measure of futility. For such an inquiry can give satisfaction only to the representatives of a certain school of erudition; there is, moreover, no means of checking the hypotheses which cast doubt, whether the point at issue is concerned with dialect or a poet's biography. What is essentially important, surely, is that whole generations of literati lived on the heritage bequeathed them by this ancient culture. Not that such a course of

events is in any way exceptional: many primitive literatures have been thus transmitted by professionals endowed with prodigious memory. To proceed with a tendentious critique of these poems in an attempt to prove them apocryphal would be effort misdirected.

Islam was born, and Hassan ibn Thabit was the first political poet to take up the defence of the new religion. His talent, however, was less than his historical importance, and he was overshadowed by his contemporary, Ka'b ibn Zuhair, whose *Cloak* can stand as a counterpart to the pagan songs.

In this very early Islamic period we may notice Ibn Mihdjan, a Bacchic and slightly blasphemous poet, and Hutaifa, a parasitical singer, a deadly satirist, who treated his silence as a saleable commodity, but is none the less praiseworthy for the quality of his style. Love poems rise to great heights with Ibn Kaisal-Rukaiyat, for whom the emotion of love was a kind of madness, and Djamil, who introduced into Arabic literature a new note, the precursor of *l'amour courtois*.

Reading the poets of the Umayyad period, one would scarcely suspect a modification of the social structure: there is the same praise of Bedouin life and the same mocking of the city-dweller.¹ The Moslem spirit is also absent. It should not, however, be too readily concluded from this that none of the poets of the period was religious. They were the victims of their models, and certain themes, like the praise of wine, were part of the rules of the game. But generalizing must be avoided; a poet such as Kumait is explicable only in religious terms.

First place goes to an incomparable trio, Akhtal, Djarir, and Farazdak, magnificent perpetuators of antiquity and, as it were, a bright reflection of the Bedouin mentality of the past. Akhtal and Djarir carried on a war of epigrams, and Akhtal, who was a Christian, gave majestic treatment to panegyric, satire, and love. His work is predominantly chaste, a characteristic not shared by his colleagues, and his satires are not lewd. In the field of satire, Djarir was a master, and his quarrels with Farazdak must have taken up most of the forty-odd years of his existence. The record shows that in their mutual invective coarseness rivalled talent. In the sense that their insults were directed not at personalities but at the clan, both writers are the offspring of the pre-Islamic tradition.

But in the Arabian Peninsula there was a new factor. The large numbers of slaves who peopled the two holy cities of Islam included many who were accomplished artists, and from their influence sprang an atmosphere of refinement. At Hedjaz, for example, music was not only tolerated, it was encouraged. Thus were Mecca and Medina set on the road to becoming centres of pleasure and meeting-places of a brilliant society. In this connection, one thinks of the *Inimitable Life*. The poets were Arabs, but the musicians and singers, male and female, were almost without exception of either Persian or Greek extraction. These foreigners enjoyed great respect from all who could appreciate their fine qualities and the profoundly artistic aspect of their temperament.

Under the Abbasids, poets continued to proliferate, and there is room here to mention only the great artists and the original thinkers. One of the most curious figures was Bashshar ibn Burd. It was strange enough in itself that this Persian should have become a great Arabic poet, for he was a vigorous nationalist who did not hesitate to scoff at the Arabs; in fact, the inception of the movement of reaction on the part of the non-Arabs, the *shu'ubiya*, can be traced to him. With 'the sharpness of a Mazdaean whom Islam had not conquered', he persisted in declaring his sympathy with his original faith. Bashshar's love poems have the flavour of materialist sensuality, sometimes of obscenity. The drama is heightened when one realizes that Bashshar was blind from birth and extremely ugly.

Abu Nuwas was born at Ahwaz of a Persian mother. His work is of great variety, and one cannot but admire his talent for impromptu production, in spite of the plagiarisms of which he was guilty but in no way ashamed. His hunting poems and panegyrics have their roots in the old poetry; his satires are cynical and coarse, but of an unrivalled force that entitles him to be described as perhaps the greatest poet in Arabic literature. A singer of sensuality and rascality, he frequently boasts of his liaisons with young ephebes.

Abu Atahiya was an Arab of Kufa. He belongs to a type of poet found in all civilizations, leading a life of debauchery in the bad company of the cabarets of Kufa and Hira, and the Baghdad suburbs, then, however, repenting, and denouncing dissipation and preaching renunciation in his verses. He emerges now as the 'singer of human grief', a philosophic poet, whose main notes are pessimism and the sense of the vanity of worldly goods. The work of Abu Atahiya is in two respects revolutionary: firstly because it first introduced the poetry of thought, albeit a declaration of the resolve to bear bravely the burden of sorrow since it was inescapable had already been made in antiquity; and secondly, because it embodied an attempt to shed the ponderous cliché and make expression clear and readily understandable.

Ibn Dawud was the son of the founder of Zahirism and himself a theologian and jurist. He produced an anthology of poetry with his personal assessments and criticism. An idea of his importance may be deduced from the fact that we have to attribute to him the 'first systematization of Platonic love'. His work was perhaps better received in Spain than in the East, and, through Ibn Hazm, his ideas gained currency in the rest of Europe.

Ninth-century scientific and philosophic thought found its poet in Ibn Rumi. His endeavours were not entirely successful, and though he must be given his due as a pioneer, he cannot be thought of as the equal of Mutanabbi or Abul-Ala Ma'arri. Credit must certainly go to him, however, for the range and venture of his ideas. Philosophy and astronomy figure in his verses, and there is also reality, closely envisaged, together with accounts of crafts that yet entail no coarsening of his style. His life was not a happy one, and his poetry has a certain bitterness: one senses a feeling of hurt sensibility, and a horror of privation induced by poverty.

The Hamdanids of Aleppo maintained a lavish court. Of Arabic blood, they bore alone the burden of a holy war against the infidel, and they prided themselves on their interest in literature and science. In the entourage of Saif al-Daula were to be found such poets as Mutanabbi, Abu Firas, Sanaubaris, and Babbaghā. Here also were Abul-Faradj Ispahani, a charming man of letters; Farabi, a philosopher with a universal mind; Kabisi, the mathematician, and Ibn Nubata, the famous preacher.

The poems of Sanaubaris are about the towns of Rakka and Aleppo, and the gardens of Damascus, and are notable especially for their descriptions of flowers. He was the first Arabic poet to sing of nature tamed; he also marked an advance on his precursors in the new notes he found to convey the beauty of the skies, light, and atmosphere—even snow makes its appearance in his poetry.

Abu Firas, Saif al-Daula's cousin, took part in the Greek campaigns and was taken prisoner, spending four years in confinement in Constantinople, where he was treated well. His sufferings were entirely psychological, and consisted in his inability to bear the separation from his mother. Grief found expression in the series of poems, the *Byzantines*.

Abul-Faradj Ispahani is probably one of the most popular writers of Arab literature, with his *Book of Songs*, a poetic anthology, and a historical and biographical source of the first order.

The giant is Mutanabbi, who surpassed, even as he imitated, the greatest poets of Arab antiquity. His historical compositions, accounts of actual happenings, breathe the very spirit of epic. They have the extraordinary force of the work of the visionary, who can yet be concise and go straight to the point and makes use of all the artifices of poetic technique. The poems contain some lofty similes, and dexterous use is made of antithesis. In the matter of form, Mutanabbi is admired for his command of rhythm and for his word-combinations. He was a professional flatterer, but he redeemed the baseness of the proceeding by the majesty of the talent which he brought to it.

A Syriac literary tradition had been created, and was continued in the work of a blind poet, Abul-Ala Ma'arri, a Syrian by birth and education, and a prince of his native town, Ma'arrat al Nu'man. While continuing to administer his city, Abul-Ala adopted the ascetic life, living on barley-bread and practising strict vegetarianism. His verses are expressive of the gloomiest pessimism; they profess his irreligion with exceptional talent, but not without brutality. Reference will be made later to his *Epistle of Forgiveness*. The note of these atheistic writings is one of deep and bitter disgust with the world as God has created it. 'If I myself had chosen existence,' he exclaims, 'I should have bitten my fingers in an agony of remorse.' This great poet would have been inconceivable before the psychological revolution effected by the Karmatian movement, the pathetic despair of which he carries to the limit: 'If fathers knew, they would not beget children.'

Arabic Poetry in Spain

In its formative period, Spanish cultural tradition was exposed to Mesopotamian influence. Its poetry nevertheless would seem to have had its measure of originality: from the end of the tenth century, the vogue in Spain was for floral poems that sang of the flowers which were cultivated in the countless gardens of the peninsula—in contrast to the East, where the preference was for poems of hunting.

The question of courtly love treated by Spanish Arabic poets has aroused much controversy as to its having been a possible influence at work on the troubadours of Provence. In the first place it is more or less established that *The Dove's Necklace* of Ibn Hazm was written under the Mesopotamian influence of Ibn Dawud. In the work of both Ibn Hazm and the poet Ibn Kuzman, moreover, are to be found Oriental clichés and themes. On the other hand, the success of the popular poetic modes is specifically Andalusian, and it is agreed that bilingualism is much more deeply manifest in the Iberian peninsula than anywhere else. Stress should be laid on this original aspect of Andalusian poetry in the eleventh century, for it indicates a break with the East.

Ibn Shuhaid was a poet and literary critic, and his *Epistle*, dedicated to Ibn Hazm, pictures a visit to the poets' Paradise under the guidance of an inspiring djinn. It is a theme which may have inspired the *Epistle of Forgiveness* of Abul-Ala Ma'arri, which may possibly have been known to Dante. Zestfully, Ibn Shuhaid invents dialogues which allow him to make full play with the expression of his personal opinion of the poets' respective merits.

It was in Spain that there developed a popular kind of poem, the muwashshah, which turned into a veritable literary genre. It consisted of at most some ten stanzas, the first having a common rhyme which recurred at the end of each succeeding stanza. It was intended to be sung: its theme most frequently was love, but other subjects, even edifying ones, were also treated.

The wandering poet, Ibn Kuzman, might thus have done no more than seal an established custom: but he did so with brilliance, creating the *zajal*, similar in genre, but using the Spanish dialect. He remains the most successful representative of popular Andalusian poetry, and he had no successor of note. Despite their dialect form, his verses are fairly close to the classical poetry, and consist usually of a love song and a eulogy.

Writers in Prose: History and Artistic Prose

The literary merits and influence of the Koran call for no demonstration, and its 'unsurpassability' is for the Moslem a first truth.

There existed from early days, along with the readers of the Koran, popular preachers, who spilled out from the mosques into the public squares. They told edifying stories presented in a familiar fashion. Politicians enrolled them as propagandists. There were also the convinced ascetics, who belonged to the Sufi movement. And lastly, on the lowest rung of the ladder, came street

story-tellers who proffered wares of less austerity: they were to be the heroes of the *Makamat*. Whether for their independent doctrines, which caused them to be suspected of heterodoxy, or for the mildly sacrilegious character of their entertainment, these declaimers incurred the severe displeasure of religious circles, but they remained at the disposal of the public authorities.

The first great prose-writer of any calibre was Abd-Allah ibn Mukaffa a Persian by origin who had been converted to Islam. At heart, however, this author remained Mazdaean or even a Manichaean; this fact would seem to have been the chief reason for his execution at the age of thirty-six. The date of his death should be noted: he died in 757, when the second Abbasid caliph Mansūr had been ruling for three years and the new dynasty was not eight years old. We must justly pay tribute to the precocity of Ibn Mukaffa's genius. The second point worth making is that, notwithstanding the dates of his works and particularly in relation to Mansūr, his style, both scientific and literary, was formed under the Umayyads. He first received an Iranian education, but this was fertilized by Arab culture. The twofold character is apparent: his works are Iranian in form, Arab in content.

It is hardly possible to narrow down to one man, still less to any precise date, the influence of Persian thought on Moslem civilization. The Iranians began to be of importance under the Umayyads² and the foundation of Baghdad may be considered to have been an essential element. This is a measure of the stature of Ibn Mukaffa, who was dead before the creation of that new capital of the empire. It is best at all events not to draw a line of demarcation, which is bound to be arbitrary where cultural evolution is concerned. It was under Hashim that a *History of the Kings of Persia*, of which Mas'udi saw an illustrated copy, was translated into Arabic (737).

Ibn Mukaffa translated into Arabic the *Khudai-Nameh*, one of Firdusi's sources for his *Book of Kings*, and a kind of novel in Pahlavi, the *Book of Mazdak*, which had been very popular. This last was more of an entertainment than a presentation of doctrine. He was responsible also for the translation of the *Ayin-Nameh*, or 'Code of Etiquette'. But his fame rests primarily on his Arabic version of the Indian fables of Bidpay, made from a Pahlavi version, to which he gave the title *Kalila-Dimma*. (Pl. 32a, b.) It was a moral treatise, brought from India by the Persian doctor, Barzawaih, for king Anushirwan. It was originally a Hindu work, the most popular version of which was known as the *Pachshatantra*; it had been in circulation in Syriac translation since the end of the sixth century.

The Arabic version is a masterpiece, and a very successful one deriving an advantage from appearing in an illustrated form. Ibn Mukaffa in the East played the same part as founder of a canon of artistic prose that was later to be filled by Jacques Amyot in France.

Thus one of the foremost prose-writers in Arabic was a translator of foreign origin, whose recent conversion to Islam was still suspect and for whom, in addition, Arabic may not have been his mother tongue. An additional injection

of energy from outside was necessary to make possible the step beyond poetry, the only medium in which authors of true Arab stock had shown talent. The work of Ibn Mukaffa had a very great effect, and to him falls the further credit of having brought the Pahlavi heritage into Arabic literature.

In the titles of two of Ibn Mukaffa's epistles appears the word *adab*, which was to become so important in Arab and Moslem civilization. The significance of this word is manifold: it has something of the Greek *arete*, but includes also the sense of justice, spiritual strength, and piety, and in addition, culture, well-bred behaviour, and a certain *savoir vivre*. In addition, with the coming of aspirations to culture the word took on a figurative meaning, covering a knowledge of Arab philology, poetry, the stories of Arab antiquity, and stylistic elegance. The works of *adab*, which proliferated, drew their inspiration from the collections of 'Precepts', still in the post-Sassanian period in Pahlavi.

The spread of Arabic prose through Iranian society was to intensify an anti-Arabic movement already confusedly in existence, in the literary field. It termed itself the *shu'ubiya*, from the word *shu'ub* (confederations), as opposed to *Kaba'il* (tribes), in the Koran. It expressed also the dislike felt by the Mesopotamian farmers for the Bedouin Arabs, and that of the Persian civil servants for the Arab-derived society. The great representative of the literary side of the movement, in which the poet, Bashshar ibn Burd³ also figured, was Sahl ibn Harun, a writer of an impeccable Arabic prose, who was appointed by the caliph Mamun to be director of his Academy of Wisdom.

The Greek and Persian Heritage

The essential factor was the meeting of Arabic-speaking intellectuals with translations from Greek and with the Persian civilization which set the tone at Court, in the administrative offices, and in educated society, thus bringing together three currents of culture, refinement, and the taste for pleasure. At the cultural level, there was a conflict which was destined to develop into a bitter war between the conquered peoples, the 'mixed races' who claimed the honour of having made available to the Arabic-speaking community the heritage of the Greek and Persian civilizations, and the Arabs proper, who were intent on maintaining to the utmost of their ability the concept of the transcendence of Islam and the value of the old poetry. In this rise of Arabic-speaking civilization, Iranism is placed on the same footing as ancient Hellenism, a new humanism making itself felt in a poetry-nurtured society, with the backing of the introduction of the thought of antiquity.

The first historians were alive to the danger, and the activity of Mohammed Kalbi and his son Hisham is impressive, for both displayed a remarkable acquaintance with Arab antiquity. In the early days of Islam, tribal archives must have been kept, which were in fact the rosters of the army. It was not long before these archives took on a historical character. They were probably used as weapons against the supporters of the *shu'ubiya*; there was an element of risk involved in praising Arab paganism, for which, save for its poetry, the

Moslems had little love. But some counterbalance was needed to offset the popularity of *A Book of the Persian Kings*, translated by Ibn Mukaffa. Indeed, the traditionalists, for whom history began with Mohammed, foamed with rage and denounced the Kalbi father and son as forgers; today we know the contrary to have been the case.

History was thus at first the record of the tribal war of old Arabia, of the 'Exploits of the Arabs', which gave also precise details about family and tribal genealogy. In effect, they reflected the equivalent of our own territorial patriotism. It was based on oral traditions which had their roots in poetry, the latter playing a far more important part in the development of these traditions than that played by the documents of the archives.

From this setting Wakidi emerges as representative of a precise historical tendency, the narration of the military campaigns of the Prophet. His work was carried on by his secretary, Ibn Sa'd, who left nearly three thousand biographies of people who had approached Mohammed. He thus created a 'science of men' and provided the scientific basis for the traditions soon to be collected.

The first historian of the life and deeds of Mohammed was Mohammed ibn Ishak. The main interest of his work lies in the fact that the author's education had been at Medina, where he had encountered the hostility of pietistic circles, headed by Malik Ibn Anas, and whence he was called to the court of Baghdad. His *Life of the Prophet* was incorporated in its entirety into the work of Ibn Hisham.

This detailed account of the military events is purely Arabic, modelled on that of the accounts of the ancient Arabian tribal wars. It is the equivalent in prose of the braggadocio already familiar in verse, with its setting of the tribes against each other. Its originality, where the national past is concerned, lies in its citation of the names of the traditionalists who stand as warranty for each other, the oldest having witnessed in person the events narrated.

History was now to feel the influence of the *hadith*. The chroniclers were diffident and set themselves a humble enough aim: the accumulation, with the aid of index cards, of all that their forebears, for generations, had written on the matter. History was to become an enumeration of facts, unorganized, without coherence, and informed by no cause-and-effect relationship whatsoever. The postulation of any link at all between them was rare in the extreme. The historians are as a rule dispassionate: their desire to be objective is manifest in their practice of recording different versions of the one set of events, without any indication of preference. Their principal concern was that none should be omitted. They can thus not be held responsible for the distortion of fact, since this was something they wished to guard against. But there nevertheless was distortion—inevitably, given the derivation from the traditionalist system.⁴

While history was thus groping for its path, Djahiz, the greatest Arab writer of the ninth century, emerged. He was born at Basra, and was probably descended from erstwhile slaves long since merged with the Arab community.

This fact was in itself indicative of the degree of culture which he stood to acquire in his native town. He made an extensive study, under the best teachers, of philology, literature, and theology, in which subject his master was a Mou'tazilite. Of Greek culture he learned through the theologians and in the course of conversations with the great translator, Hunain ibn Ishak. He learned of Persian civilization from the works of Ibn Mukaffa. Djahiz devoured books: to open one was, for him, to finish it, regardless of subject. He lived in bookshops. In Basra he also learned Arabic from the Bedouins around the market. He was called to Baghdad by the caliph Mamun and passed almost his whole life in that city. It is recorded that his stays elsewhere were confined to Damascus and Antioch.

The range of his interests was exceptionally wide; here is an encyclopaedist, distinguished by his affinities with the Greeks, his religious feeling, and his gifts as a writer. In the interests of pleasurable instruction (for such was his aim), he made Arabic prose a flexible and rich instrument and an apt medium for the expression of ideas. In his hands it reached heights that it never afterwards equalled. He departed from tradition to treat of the present and to describe reality, and, not content with this orientation of literature in a new direction, he laid the basis of a humanism which in its origins was almost exclusively Arabic and hostile to Persian interference, and later bore the increasing imprint of Greek culture. Thus he is to be found referring to the explanations found by the Greeks for scientific facts, and opposing the mythological explanations of animals, stars, and tides propounded by the ancient Arabs. He also had a rationalist and independent turn of mind, with a marked penchant for criticism, amused and teasing in tone, which he focuses in particular on the clerks of religious learning. Their ignorance, errors, and prejudices are subjected to a mockery, more effective as it is wittier. A violent attack on the secretaries of the administration shows him to be an able caricaturist. The same verve animates his introduction into literature of the 'rogue', an anticipation of the *Makamat*, with its recording of the harangues of beggars.

His *Book of the Animals* is the oldest treatise on natural history in Arabic, and also contains items of information about physics, chemistry, zoology, anthropology, religious matters, and philology. He touches at times on questions of modern import, as when he notices certain biological facts, the phenomena of adaptation, and the struggle for life. But the writing about the animals is really an accumulation of quotations from poets, religious references, Koranic commentaries, and personal observations on subjects of the most diverse kinds. Its appeal lies in its digressions.

In his *Book of the Misers*, Djahiz sets out to sing the generosity of the Arabs in contrast to the avarice of the Persian-born bourgeoisie, the moneyed class whom the next century was to see so important in lower Mesopotamia.

His treatise on rhetoric is at once an anthology and an attempt at the working out of a constructive literary theory. It is a monument to the glory of Arab

eloquence; it is also a source of information of the first order about the development of asceticism in Islamic circles, and about the popular preachers.

Djahiz undoubtedly stands above his contemporaries, but in the ninth-century Mesopotamia there was no lack of men of calibre. Djahiz's universal range of interest was shared by Ibn Kutaiba, grammarian, literary critic, historian, and essayist, a writer of Persian origin, but by culture Arabic, a strict Sunnite and unquestionably a noble figure and a man of the first rank. He appears as the representative of a movement which sought to place itself above the differences between the grammatical schools of Kufa and Basra, and to found the school of Baghdad on a measured eclecticism. He emerged, too, as a defender of the religious tradition against the philosophic current stemming from the translators, and as an opponent of those for whom rational judgment was paramount. He was a champion of the infallibility of the Koran and the tradition in the face of philosophic scepticism. Furthermore, Ibn Kutaiba had the perception to see the danger of the *shu'ubiya*, by this time no longer a mere expression of racial discontent but an attack by the whole of an extreme 'snob' faction and the entire body of the civil service. The lash of his criticism curled unsparingly alike around Persian-Aramaic thought, Greek science, and the free-thinking elements. Endowed with a rare gift of eloquence, he rose above the passionate, envenomed disputing; it was in part as a result of his serious style of argument that what had not always been a sterile antagonistic force subsided.

In the literary field proper, Ibn Kutaiba had a sufficiently original mind to write an *Art of Poetry*, and, as well as a manual for the perfect secretary, he left historical works, the value of which has been recognized. He was, indeed, a writer of very great talent and of immense Arabic culture, and he fittingly brings to a close a century that had opened under the auspices of Ibn Mukaffa.

In the meantime another author, Tabari, Persian by origin, had been unobtrusively at work on two monumental pieces of writing, a commentary on the Koran and the *Annals*, the earliest universal history in Arabic. To these Tabari brought the scrupulous honesty of a theologian, and the accuracy and meticulousness of a man of law and a scholar. His manner of breaking down facts was the delight of the collectors of traditions, avid for as many parallel versions as could be come by, and charmed by the opportunity simply to split hairs. His pre-Islamic history is a synchronized presentation of Biblical history according to Moslem ideas, and of Arabic and Iranian history. The sources for the Arabic and Iranian part were various, and were strung together without regard for exactitude. The history, as it approaches the writer's own period, becomes pro-Abbasid, and certain discreditable episodes are omitted. Its interest is limited: there is little to be learned from it about the Far East, Egypt, or Syria. What the work in fact amounts to is, from the Hegira onwards, a chronological record, set out in years, of the history of the Caliphate—imperial annals after the Persian fashion. It is a conscientious transcription, full of the contradictions of the traditions which the author has assembled.

Tabari's limitations throw into yet greater relief the merits of Mas'udi. This writer was born at Baghdad, a descendant of a companion of the Prophet. All his life he travelled: in Zanzibar, Sind, Cochin-China, Java, and China, and over the farthest frontiers of Khorasan, in central Armenia, exploring in turn Iraq, Syria, and Egypt. He was a serious scholar, and there was no discipline, literary or scientific, in which he was unversed. Mas'udi, the historian, it is clear, owed to his wanderings a sounder insight into the course of events than was given to the chroniclers in the library. It should not be forgotten how disturbed a period it was in which this author lived; a moving page of his work expresses all its pessimism. History in the strict sense is properly treated. Mas'udi is, of course, not concerned to write like the traditionalists; he decides for one version, sometimes two, but we are not told by what criteria he judged. His first concern is to tell his story with charm: even in dealing with the past, he loves to cast his matter in the form of a conversation, which makes most agreeable reading. War and politics, moreover, are for him not the only stuff of history, and there are continual digressions, about poets (with many well-chosen quotations), music, cooking, horse-racing, and falconry. With Greek philosophy and science he is perfectly at home. In short, he is of the same high calibre as a historian, scholar, philosopher, and geographer, as he is a story-teller, who holds his place by his naïve charm and poetry.

History, having thus attained to technical mastery, henceforward moved along clearly defined paths: annals, biographies, topographical or dynastic studies, and local histories. The annals, by definition, follow a chronological pattern, and the account of what was one event is cut into annual portions—a method which was fatal to the production of an effective synthesis. The record for each year covers the whole of the Islamic world and finishes with obituaries. Other scholars examined various aspects of historical science and became scholars of a particular type. Their activity resulted in works of a usefulness not then apparent. They were dedicated to the glory of local celebrities, but were of value nevertheless. Although some of these 'Lives' bordered on hagiography, they were valuable for the interesting light they threw on the details of the environment.

Parallel with the new impetus in science, the emergence of history, and the poetic revival, ran a flowering of works of imagination and the development of an artistic prose. Kudama ibn Dja'far, for instance, made himself felt both by his reflections on social and political life and by his following up of the initiative of Ibn Kutaiba by a new *Art of Poetry*.

Ibn Duraid, apart from very valuable work as a lexicographer, wrote rhymed *contes*, depicting most convincingly the way of life of the desert-dweller, in the guise of known names and events. He made no attempt to conceal his epicurean temperament, but with Azdi, on the other hand, the reader is plunged into a literature of real cynicism, the origin of the genre of the *Makamat*. His work is a catalogue of libertinage and debauchery with scarcely a single decent

item in it: it is impossible as a true portrait of a whole society. The heroes of these little comedies were doubtless real, and Abu Dulama, the clown poet of the Abbasid court, comes to mind. Perhaps it was Abu Dulama who was in part responsible for the creation of the literary type of the bantering mountebank, with his somewhat primitive humour and vulgar mendicity.

A Thousand and One Nights

Towards the tenth century Mas'udi writes of 'works translated from Persian texts', and mentions the book called *Hezar Efsaneh*, or 'A Thousand Tales'. Corroboration of this, of a still more definite kind, is found in the *Fihrist*, which, speaking of this collection in a fairly lengthy section on romantic literature, argues that it is no other than the famous prologue to *A Thousand and One Nights*. The tales took their place alongside what might be called the Utopian genre of the Arabs, which consisted of accounts of voyages combining imagined adventures with factual realities, among them *The Marvels of the Sea* and *Sinbad the Sailor*. The popular story-tellers took as their favourite themes famous love stories. These were held in scant esteem by the literati—the reason perhaps for the non-development of narrative literature in the classical language.

But the real inventive genius made itself manifest in Hamadhani and his successor, Hariri. Essentially an artist, for whom subject was secondary to form, Hamadhani was the creator of the genre, the *Makamat*, called conventionally in translation 'Assembly', a sort of narrative in some ways analogous to the mime of ancient Greece, and dealing with the exploits of a somewhat unedifying character of unparalleled effrontery, the future hero of the picaresque novels. These short condensed comedies with the varied subject-matter and exaggerated comedy of the fairground, are the prototypes of the kind of novel which Cervantes was to make famous. There has been much discussion of the origin of the *Makamat*. It would seem probable that Hamadhani found the subject in the harangue of the beggar, which Djahiz had introduced into literature. Hamadhani's own originality lay rather in his style, brilliant and fastidious, which might well have become the medium for the theatre, presenting as it does the rarest words of Arabic. There is a clicking sound which is found nowhere but in the *Makamat*, and a superabundance of metaphors, conceits, puns, allusions and assonance. Clarity is subordinated to an elaborate sumptuousness; burlesque and vigour take the place of preciousness and verbal dexterity; the author is swallowed up in the virtuoso. Hariri displayed eloquence, skill and subtlety in the same degree, as well as a staggering fantasy in simile, sometimes of priceless comicality. Some of these writers were of Persian origin and lived at the court of the Buyids, the scene of the emergence of two great ministers, Ibn al-Amid and Ibn Abbad.

This civilization, of course, with the growth of wealth in private hands and of the love of luxury, had its detractors. The fiercest condemnation came from Tauhidi, a man whose character was formed by early poverty. Hatred made him a first-rate writer, a violent pamphleteer—indeed, an unjust one—

against the literati, the scholars, and the famous, who had found a way to soft living. He wrote a forceful prose, and was a remarkable stylist who has been compared to Djahiz. He was never lacking in knowledge: he was at once philosopher, grammarian, jurist, and essayist. At all times he displayed an exceptional mastery of language, a great familiarity with its secrets and resources. He was a difficult author, who yet avoided falling into affectation and mannerism, and was increasingly beloved of his contemporaries.

C. Persian Literature

A literature in Pahlavi has survived in post-Islam manuscripts, and persisted up to the eleventh century. Theologians put forth singular energy in the effort to safeguard Zoroastrian doctrine as well as the national language. Information is available about several aspects of the Sassanian civilization from the *Denkard*, or 'Acts of Religion', an Apocalypse or visionary account of heaven and hell from one of two juridical fragments, and, in particular, from the *Andarz* or 'Books of Counsel', famous manuals of instruction for the accomplished courtier, which had so marked an influence on Abbasid high society. A great part of this literature of psychological education was transmitted in Arabic translations, as, for instance, those made by Ibn Mukaffa for the *Kalila-Dimna*, and *The Book of Kings*. A few historical romances in the post-Sassanid period testify to a quite late retention of the old language. In the first two centuries of the Abbasid Caliphate, however, Persians were 'welcome on condition that they used Arabic as the official and literary language.'⁵

Reversion to Persian as a written language was to have far-reaching effects, for Arabic had never spread very widely among the people. Bal'ami, minister to the Sassanids, made a shortened adaptation, in 963, of the *Chronicle* of Tabari, the oldest historical work in Persian. There survives from this period a fragment of a Koranic commentary, and Bal'ami had also had Tabari's commentary translated.

Poetry in the Persian language dates certainly from the Tahirids, and had a particularly good period under the Samanids. The oldest verses go back to the seventh and eighth centuries, but it is generally agreed that these isolated cases are relatively of little importance. The earliest of the great Persian poets is Rudaki, who died in 941. He was a protégé of the Samanid princes, and more especially of their great minister, Bal'ami. He was the author of many lyrics, and perhaps the inventor of the quatrain, the form which Omar Khayyám was to immortalize. The position of Rudaki in the Persian literary world is similar to that of Shakespeare in England.

Another poet, Dakiki, who died in 975, by origin a Mazdaean, was commissioned by the Samanids to give poetic form to the half-historic, half-legendary stories of ancient Persia. Dakiki embarked on the work, but was assassinated by one of his slaves before he could complete 2,000 lines. These have survived through Firdusi, who inserted them in his *Book of Kings*.

But it was really Firdusi, in his *Book of Kings*, an epic of some sixty thousand couplets, who brought literature in Persian to its real flowering and assured its future. It should be noted that very long poems are something of which Persian literature has no lack. This is the masterpiece that opens the Persian renaissance, which was linguistic, since Firdusi crystallized the modern language, but also national in its double historical and religious aspect.

The Book of Kings is not a continuous history of Persia in a chronological framework: it is a series of episodes, treated more or less comprehensively, according to the value and importance of the sources that the poet is using. The whole epic is written to one end, the glorification of the idea of the nation, which is driven home by a series of combats or interminable disquisition. Firdusi's *Book of Kings* is a poem engendered by a fierce exaltation of national sentiment; none of the peoples under Islam took to such extolling of their past. It is, in fact, an invaluable piece of psychological documentation, indicating what were the most general aspirations of medieval Iran. Firdusi's work is the concrete manifestation of the emergence of a national consciousness.

The eleventh century saw a few authors writing prose of an effortless elegance that testifies more than adequately to the bringing of the language to perfection. Two political treatises, the *Testament* of the great Seljuk minister, Nizam al-Mulk, and the work of the Ziyarid prince, Kabus, are landmarks. Rawandi wrote a florid history of the Seljuks which he concluded with a sort of manual for the courtier, containing advice on archery, horse-racing, drinking-bouts, and chess. Nasir-i-Khusrau produced a traveller's notebook, alert and informative. Excellent, however, as he is as an observer, it is as an Ismaili propagandist that this writer makes the more disturbing impression. His religious poems, of some obscurity, reveal a mind delving deep, and never compromising.

This same period saw the advent of the 'debate', which was used in the dawn of Provençal literature. Its inventor in the modern language of Iran was an eleventh-century poet, Asadi, who wrote, for instance, of the debate between day and night, and that between the bow and the lance. There has even come down to us in Pahlavi an argument between a goat and a vine stump!

It was in the middle of the eleventh century also that the poet, Djurdjani, 'wrote the poetic version of the loves of Wis and Ramin, from a Pahlavi original; a poem to some extent reminiscent of the story of Tristram and Iseult'.

The poet Nizami came from the Caucasus. He is important as a mystic, but his original contribution was the launching of the verse love-story, working with themes both from national legend, like that of Khusrau and Shirin, and from others dear to the Arab tradition, like that of Majnun and Laila.

Omar Khayyám's triumph was in the quatrain, and he also sounded the first note of a new attitude, atheistic, pessimistic, and libertine. By his convictions he is akin to Abul-Ala Ma'arri, whose acerbity, however, he preferred

not to share. The force and grandeur of his distichs spring from a studied formal conciseness, which he carried to perfection.

The thirteenth century, which tested Arab culture so severely, proved much less damaging to the intellectual life of Iran. An important place must be given to the immense talent of the mystic Jalal al-din Rumi; and there is Sa'di, one of the few oriental writers who can lay claim to some stature as a humanist. His works, both *The Rosary* and *The Orchard*, are available in many European translations. In striking images, the moralist, who is almost devoid of illusions about mankind, also eschews bitterness. The names that come to mind in connection with him are Horace and Montaigne, which is to say that in his genius and his epicureanism, which is tempered with moderation, he may stand with the greatest of thinkers.

The Mongols, when they entered Islamic territory, had a bad reputation. For this their historiographers in Persian were not responsible. Ata Malik Juwaini and his successor, Wassaf, express themselves preciously (the latter even pretentiously); but the great minister Rashid al-Din, who paid with his life for an undeserved fall from favour, wrote a sound universal history.

4. EUROPE AND BYZANTIUM

A. Byzantine Literature

Literature may attract our attention either as a treasure-house, storing the gradual accumulation of gems which form the enduring inheritance of mankind, or as a collection of documents reflecting the places and times where and when each document was written. Here, we shall chiefly take into account this latter aspect, especially in regard to the literature of Byzantium. Partly because no modern national literature descends directly from it (and even modern Greece takes greater pride in the classic legacy), the considerable body of Byzantine literature is no longer read by a wide public, but almost exclusively by a limited number of scholars (many of whom, moreover, are not looking for Byzantine original products but for ancient works, which Byzantine writers have the great merit of preserving). On the other hand, the importance of Byzantine literature as a mirror of its time and place is beyond question.

What is first of all significant about this literature is its extreme variety; the number of *genres* represented is very large. The extension of education throughout the Empire had created a wide audience, especially in the towns; and the demand which this audience created was in turn responsible for the number and activity of the copying workshops, which in Byzantium were confined, as in western Europe, to the monasteries. It is also readily understandable that there should exist within this literature two main currents of inspiration: a more aristocratic scholarly one, drawing principally on the purely literary language, and another, simpler and more popular in its appeal, approximating more closely to the spoken tongue.

History

Certain subjects, however, transcend this last distinction to some extent. History is a case in point. Amongst historians there was undoubtedly a recourse to ancient models, to the works of Thucydides and Xenophon; and all too frequently their style and narrative procedure was imitated. But it is equally true that there was a new current of thought which had its source in Christianity. For the Christian, time was no longer the cyclical process envisaged by the thinkers of Greece, an eternal recommencement. For him it unwound in one single continuum from the Creation to the end of the world, and, in the course of it, a progressive accomplishment of the designs of Providence. The world could be compared to a human being, passing successively through the stages from infancy to old age. But the ageing was also a progress, each generation profiting by the errors and advances of its predecessors, and humanity drawing ever closer to the perfection willed for it by God.

This new conception of history as something developing and absolute was born in the Eastern Roman Empire. It makes its first appearance in the *Chronography* of Eusebius Pamphili, bishop of Caesarea (265–329). Secular history and Christian history based on the Gospels are here brought together within the framework of the six ages of Humanity; the last of these corresponded to the Roman Empire, which was foretold by the Prophets and which, in its universality and unity, was conducing towards the triumph of Christianity. The idea was adopted by the Latin world with enthusiasm. In the Byzantine Empire itself, Eusebius had a number of continuators, who brought the narrative up to their own period, writing in some cases, as, for example, Malalas of Antiochia (sixth century), with a popular audience specifically in mind.

The great masterpieces of Byzantine historiography are nevertheless histories of reigns after the ancient pattern, the foreground exclusively occupied by the emperor, his court, and his military campaigns. Justinian's expeditions, and the peoples he subdued, are portrayed by Procopius of Caesarea, not always impartially, but with vigour and animation. Among so many other authors, particular mention must be made of Psellos (1018–78), not unlike Tacitus, conceited, but with a gift for describing, sometimes with a pitiless degree of realism and always in a very fine style, the devious workings of the minds of emperors and their entourage; and of Anna Comnena (1083–*post* 1148), the enthusiastic eulogizer of her dead father, the emperor Alexis, but, in spite of this tendency to overpraise, a well-informed observer of her period.⁶

Hagiography

Akin to history, though sometimes only to a minimal degree, was another kind of book which enjoyed outstanding success. This was hagiography, the writings of the lives of the saints. Undoubtedly, many of these lives were written too long after the death of their subjects to be reliable biographies and most of them display a narrow conformity with the rules of what had un-

fortunately become a 'genre'. On the other hand, the cult of the saints, the living and popular expression of Byzantine piety, did constitute a point of crystallization for tastes and tendencies. And in consequence these Lives acquired an unexpected vogue and value. Many of them depict with realism and vividness the very different *milieux* in which the holy lives were set—imperial palaces, great landowners' provincial estates, and monasteries, sometimes also slums and brothels—or recount their wanderings under the menace of Saracen piracy. One or two display a more marked vein of fantasy: the ninth-century life of St Theodore of Edessa, probably first composed in Arabic, reads like a cloak-and-dagger adventure story, the fantastic vicissitudes of its hero allowing for descriptions of Moslem Iran or India.

Such scholarly works as are unsustained by either historical passion or religious fervour are almost devoid of interest. They show in very clear relief the defects of the Alexandrian tradition which Byzantium had, to some extent, been perpetuating: the attaching of excessive importance to form, the seeking after fine language and a display of wit, heavy pedantry, and immoderate drawing on pagan mythology even in connection with Christian themes. Byzantine literature was still labouring under the weight of the detailed rules elaborated for ancient rhetoric, and, from all the immense profusion of its oratorical production, there emerge only a few sermons remarkable because they strike a more personal note, like those of Photius, and one or two speeches by Psellos and certain of the emperors. Letters were confined within the same net of rhetorical regulations: some of them, however, such as those of Aretas of Caesarea, and of Nicephorus Gregoras, are valuable literary documents. In learned poetry an even lower mediocrity prevailed. This was based, classical-fashion, on syllabic quantity; the clumsiness attendant on attempts to handle a prosody out of touch with the common usages of the spoken language is intensified by the artificial character of the genres adopted—didactic poems and epigrams were favourites. We have space to make only passing reference to the cultural influence of the chivalric poems inspired by Latin verse epics and romances, the diffusion of which had been brought about by the more or less involuntary contact between Western knights and the aristocracy of Byzantium in the last part of the twelfth century and in the thirteenth.

Popular Literature

Although it was denied the same favour in the circles of power, and hence was less well preserved, the popular literature is on the whole of greater significance. Some half a century ago scholarly research discovered the existence of a rhythmic poetry, freed from the system of syllabic quantities, in the form of popular canticles, in which the words follow the rhythm of a previously composed musical score. The text is often graceful and charming, of value in its own right. The genre flourished up to the eleventh century, after which the wells of inspiration would seem to have dried up. In the churches of Byzantium, as in western Europe, there emerged also yet another literary form—

the drama. From as early as the fourth century, certain sermons had been worked up into dialogue form, and a number of them, thus elaborated, have come down to us. Mainly with the aid of the illustrations that accompany the texts, it is possible to reconstruct a few of the 'mysteries' that were sketched out on religious themes, such as the Incarnation. These works, however, never freed themselves from the liturgy, and this absence of a fully developed drama, and of the communication it can establish with an audience as a result of participating in a deeply emotional experience, is one of the most perceptible lacunae in Byzantine literature.

The Epic

Fortune was kinder to Byzantium in the matter of epic. The Byzantine-Moslem frontier clashes that took place throughout the ninth and tenth centuries from Cilicia to the Euphrates formed the basis for the epic style of *Digenes Akritas*. This was a work discovered in versions that have clearly undergone alteration but contain certain episodes also found in popular songs from Cyprus and northern Anatolia. The hero is the son of a converted Moslem prince and of a Greek noble woman, and an undaunted warrior for God, glory, gold, and (to a lesser extent) the Byzantine emperor. While smiting infidels, bandits, and lions, he finds time to seduce several ladies. In the late manuscripts that have come down to us, the poem is no literary masterpiece; but it displays qualities which are rare in Byzantine formal literature, such as a lively interest in nature and sensual love, and a taste for adventure and chivalry. According to Henri Grégoire, the core of the poem goes back to historical events of the ninth century, centring around a Byzantine contemporary and counterpart of Roland. Not all of his hypotheses have won general acceptance, but most scholars would agree that the Digenis literary tradition had wide diffusion outside the Byzantine territory, both among the Slavs and among the Moslems.

Barlaam and Joasaph

Byzantium, as a great commercial centre, was naturally also a place where literary themes were interchanged. Nowhere is this last fact more clearly demonstrated than in the curious prose romance, *Barlaam and Joasaph*, the exact date of which is unknown, but which was certainly composed before the eleventh century. Warned by his astrologers that his son, Joasaph, will turn Christian, the Indian king, Abenner, shuts him away in a marvellous castle; but boredom leads to the young man's flight therefrom. Outside he discovers the wretchedness of the human condition, and conversations with the hermit Barlaam complete his conversion to Christianity. This is a retelling of the story of Buddha. It must clearly have reached Byzantium from India via Iran. The oldest Greek version extant is a translation of a Georgian text. From the twelfth century, the theme spread throughout western Christendom and was treated of in every language.

Assessment of Byzantine Literature

What final assessment are we to make of Byzantine literature? Few of its products could be read in their entirety with enjoyment today; none has really found a place as part of the universal heritage of humanity. It would be unjust that the historical writings of Psellos, or some passages at least, of *Digenes Akritas*, a few *Lives* of saints and some hymns of Romanos the Melodist, should be allowed to lapse into oblivion.

There remains the historical value, which is immense. Byzantium was instrumental in calling to life the literature of the Slav peoples—of which one at least, the Russian, was swift to attain independent stature. Some of the early productions in Russian, which date from the eleventh century, read like echoes of the Byzantine *milieu*: the *Chronicle of Nestor*, for instance, was added to by degrees after the fashion of the Byzantine chronicles. But, in the cycle of legends about Boris and Gleb, who were killed by their elder brother Sviatopolk, what is extolled is their devotion to the killer and the sacrifice of their lives as a willing act of obedience to a principle of subordination which was designed to assure the unity of Russia. The *Word on Law and Grace* (*Slovo o zakonié i o blagodati*), the work of Hilarion, who in 1051 became the first Russian-born metropolitan of Kiev, asserts that, the law having been given as a 'preparation for the Truth and Grace', and new wine being best poured into new skins, the new evangelical doctrine was best extended to new peoples. It reproaches Byzantium with having desired, as Israel before her, to reserve the truth for herself. It is a notable conscious assumption of a historical position, the author striving to set the destiny of the Russian people within the perspective of a wider scheme of historical evolution.

Byzantium also, with its conception of the Chronography, and themes like that of *Barlaam and Joasaph* and those from the Apocrypha, exerted an appreciable influence on the literatures of Europe.

B. Latin Literature

When we turn to Europe, the most important factors seem to be the newly-emerging national literatures. The long survival of literature in the Latin language appears as a paradox. Yet, for centuries, while the new languages were coming hesitantly into being, Latin, the medium of the educated classes (indeed, almost the only medium used by the clergy) was alone considered worthy of use as a literary instrument. And it was from the common Latin tree that, under the stress of social differentiation, national literatures developed.

Up to about the eighth century, Latin literature to some extent reflected the evolution of the spoken language. By then, however, in the Celtic-language countries (e.g. Ireland) and in the Germanic countries (e.g. England), Latin in both its liturgical and literary uses had already slipped into the place which ever since the Carolingian Renaissance it was to occupy in Europe.

The Didactic Nature of Latin

From then on, Latin ceased to be a mother tongue: it was a language acquired at school. Latin literature is primarily scholastic. Its development, in quality and quantity, was associated with the rise of schools under Charlemagne and his immediate successors, and it shared in their subsequent decline; and again it picked up in the renaissance of schools in the twelfth century, which has been claimed to be the golden age of Latin literature. With the increased proficiency in the use of language that resulted from the progress of the schools, came a correspondingly more independent attitude towards the Latin masters. Up to the eleventh century, the work of even the best writers bristles with turns of phrases and whole passages taken over wholesale from the classics: hence the documentary value of Einhard, the biographer of Charlemagne but an imitator of Sallustius, could be called in question. By the twelfth century, however, authors of calibre had created their own personal style of expression, and their Latin had come alive.

The educational character of this literature was further enhanced by the number of didactic works. From the Carolingian period onwards, the production of these works for use in the schools was one of the major occupations of writers: the work of Alcuin and Hrabanus Maurus in this direction earned them the title of 'preceptors' of Gaul and Germany. As literature in the vernacular developed, the didactic genre continued to play a great part, but mainly as a complement to schooling.

Verse

A large part of this literature was in verse. But neither in subject-matter nor in treatment is there a substantial poetic quality. It consists for the most part simply of exercises for use in the schools, such as were to be made up to the nineteenth century. It is astonishing how unable, or unwilling, the writers were to forsake themes from the Roman rhetorical tradition or from the Bible, for the expression of the personal impressions they must have accumulated in lives that were rich in varied experience. But these scholastic exercises had at least the merit of producing, over and above the practice of prose, a sound mastery of the language.

Theology

What were the principal genres of this literature? It is not surprising that most of these exercises in Latin dealt with ecclesiastical themes. Setting apart the scholastic literature, pride of place is taken by theological writings, sermons, and liturgical plays. Originality is not often in evidence; but the better authors are distinguished by the personal note they strike, particularly when some major issue, such as the eleventh-century investiture controversy, stirs deep feelings. Certain forms of writing had already achieved particularly rich development, as for example, the epistolary. Letters by some very early correspondents have come down to us, like those of Gregory the Great, St

Boniface, and Alcuin, or later in date, of Gerbert, Peter Damiani, and Fulbert of Chartres. Their letters do not always rise above the conventional; but in them we get the clearest pictures of personalities, at grips with the cares and problems of daily life which it was the purpose of the letters to describe or to solve.

Historiography

Emphasis should be laid in particular on the considerable development that took place in historical writing. The universal Chronography created by Eusebius of Caesarea was introduced to Latin Christendom by St Augustine with his *City of God*, and in the *Seven Books of History against the Pagans* of the Spaniard Orosius (early fifth century). The form was pressed continually into service by, among others, Isidore of Seville and the Venerable Bede. In the tenth century it was superseded by the writing of Annals; it had, after all, corresponded to a universalist conception, which feudal sectionalism was making men's minds increasingly unfamiliar with. It is not surprising that it first took a new lease of life in the Empire in the *Chronicle up to the Year 1054* of Hermann Contractus (the Lame), a paralytic monk of Reichenau (which, for the years 1040–54, is a first-hand account), and especially in the remarkable *Chronography* of Sigebert of Gembloux (1105–11). It had a fine future in store, which culminated in Bossuet's *Discours sur l'Histoire Universelle*.

Annals. To the historical writing of which we have been speaking the Annals presented, by their origins, the diametric opposite. They evolved to meet the practical need for a chronology as it particularly made itself felt in the early Middle Ages. At this time the numbering of years Anno Domini (A.D.) was standardized on the basis of the calculations (which were several times revised) of the monk Denys the Little (sixth century). A yet more pressing necessity was to establish with precision and unanimity the date of Easter, from which almost the entire liturgical year was reckoned. This was a goal achieved, not without difficulty, at the end of the eighth century. The monasteries had tables giving the dates on which Easter fell for 532 years, the 'Great Paschal Period', after which the same series of dates was found to recur. In the space reserved for each year, the monk in charge of records would often make a brief note of anything that seemed to him important: the death of an abbot, a royal visit, or a meteorological disaster. In certain of the monasteries such notations became frequent, and, where the institutions had relations with the wielders of power, the records acquired real documentary value. For the Carolingian period alone, we have more than sixty of these monastic records, and some of them read like official state chronicles.

The other historical works are more restricted in intention: biographies, or accounts of events in which the author was involved. As in Byzantium, the *Lives of Saints* were the focus of really extraordinary enthusiasm, although their literary and historical value were uneven in the extreme. Extant secular

biographies are fewer; the model, though often criticized, remains Einhard's *Life of Charlemagne*.

Ecclesiastical history. Ecclesiastical histories are numerous and weighty, as might be expected in a period in which economic and cultural life centred round the bishoprics and monasteries. Their contents frequently include recopied documents. A fine example was bequeathed by Bede in his *History of the Abbots* (of Wearmouth and Jarrow). Of the diocesan histories, none rivals the eleventh-century work of Adam of Bremen on the archbishops of Hamburg, a masterpiece in the quality of its information, its objectivity, and its stylistic economy. The most accomplished and longest-sustained example of the genre is, however, the Roman *Liber Pontificalis*.

Histories of political events. The best historical works are none the less those which narrate particular sequences of events. In the ninth century, Nithard, a grandson of Charlemagne, described with lucidity and talent the struggles that followed the death of Louis the Pious. In the tenth and eleventh centuries, horizons were too restricted for the emergence of anything of much value. Stress should be laid on the quite extraordinary part that was played by the Crusades in the resurgence of historiography. The participants in the Crusades experienced exalting adventures which bred in them the sense of historical vocation, resulting in the first historical works in the vernacular. A further impetus to historical writing came with the constitution of national states, and here, of course, interest was shown by the monarchs. Otto of Freising, for example, sang the praises of the reign of his nephew, Frederick I Barbarossa; in England, the chronicles drawn up at the abbey of Saint-Albans by Roger of Wendover, until 1235, and by Matthew Paris, until 1259, are sources of great historical, and sometimes also of literary, value; in France, from the days of Suger (abbot from 1122 to 1151), Saint-Denis was a centre of royal historiography, the kings themselves charging the monks with the official recording of the events of their reigns, and having the chronicles collected. In Italy, on the other hand, historical activity centred in the towns and gave rise to the urban chronicles of the twelfth and thirteenth centuries.

Anselm. With the twelfth century, the whole of Latin literature burgeoned splendidly. The eleventh century had closed in the light of a unique personality, a man of genius, St Anselm of Aosta, abbot of Bec (1078), and later archbishop of Canterbury (1093). Anselm's theological writings, well written, are in fact true 'metaphysical meditations', and his correspondence a revelation of the man, in his sincerity and tact, to whom his contemporaries responded with love. Twelfth-century literature can boast a few individuals of this stature. What is chiefly remarkable about the literature in addition to the purity of the language, is the diversity of the genres represented. There is poetry after the models of antiquity, such as that of Hildebert de Lavardin; religious poetry, often anonymous; and the secular lyric poetry of the Goliards, clerks who

sang, sometimes coarsely, of the pleasures of the senses, and carry religious parody to disrespectful lengths.

Translations

By the twelfth century, the audience which was being reached by this Latin literature was quite a large one, consisting not only of the clergy, but also of a section of the nobility and of the emerging middle class. But the demand for cultural nourishment was much more widespread. In some cases, straightforward translation provided the bridge, as it had done before, in the ninth century, in the work of the Anglo-Saxon king, Alfred the Great. In drama, also, transposition was almost as direct: since the eleventh century the churches had been the setting for modest liturgical plays, centring round the mysteries of Christmas or Easter; and there is a manuscript extant, originating undoubtedly from Saint-Martial of Limoges, which gives side by side the Latin text of such a play and a version in the vernacular.

Adaptation. Transitions are sometimes effected, though less directly, through adaptations. Thus between Aesop's *Fables* and the later Roman de Renart, we have a poem written in tenth-century Lorraine, the *Ecbasis cuiusdam Captivi per Tropologiam*, constituting an intermediate form. Whether Latin literature had a similar influence on the epic, however, is questionable. Attempts to establish a chain of continuity between the *Aeneid* and the *Chanson de Roland* have been in vain. The problem of the origins of the *chansons de geste*, which has excited so much controversy, is one of great complexity and can here receive only summary mention. The part of these productions that can be attributed to memories of classical antiquity is a very small one, and, though certain elements may well have been taken over from the Germanic oral tradition, the *chansons* must still be regarded primarily as creations of the eleventh century, based on monastic narratives, and fostered by the atmosphere of the pilgrimages.

The transition from Latin to vernacular. Stress has rightly been laid on the close relationship between Latin literature and the national literatures, which were often extensions of it. The transition from the one to the other, however, is also a social phenomenon, linked with the whole process of European development from the eleventh century. Changed conditions and social differentiation were reflected not only in the extension of a public eager for culture but also in a modification of taste, and the emergence of new themes and forms. Latin literature, strong in its internationalism and its aptitude for the expression of abstract ideas, was not to die; indeed, in the course of the thirteenth century, its volume increased. But literary expression proper was to be to an ever-increasing extent through the medium of the so-called vulgar tongues.

C. 'National' Literatures

The first productions in the popular languages made their appearance in a

feudal world. They were the expression of the dreams and tastes of lords, knights and squires. Religious inspiration, however, was not slow to break into this class-conscious literature.

The Troubadours

Towards the end of the eleventh century there suddenly emerged a lyric poetry in the 'langue d'oc' (often, but not quite correctly, called 'Provençal')—the poetry of the troubadours, in other words those who 'find' (*trouvent*) both the words and the accompanying melodies. The first known troubadour was William IX of Aquitaine who already introduced the theme of courtly love and the skilful treatment of verse. Such are the essential features of this poetry. Love is the main subject: initially embodying a high proportion of coarsely sensual elements, it gradually grew more refined and evolved towards the glorification of the 'lady'. In amorous expectation it discovered a whole universe of subtle delights and torments compensated by favours granted. It led to 'joi', the condition of perfect exaltation, the source of all delight and all virtue. This love was not normally platonic and lay outside marriage—probably because marriage in the seigniorial world remained a matter of social and political convenience. Such love was termed 'courtly' because what was involved was an art of loving which developed in the courts. But along with the great lords, men of modest station also participated although all were united in an aristocratic ideal which cultivated elegance and refinement and which was subject from the outset to complex rules of versification.

Arab origins. The sudden revelation of this refined and scrupulous poetry raises a difficult problem of origins. Many scholars have emphasized its Arab sources. Before the troubadours, the Spanish-Arabic poets had devised a refined erotic poetry. The combinations of rhymes and metres which characterize such works as the *muwashshah* to some extent foreshadow those of the 'langue d'oc' lyrics. The lords of southern France who went to Spain to combat the Infidels made the acquaintance of this poetry which, in the eleventh century, was represented by such works as Ibn Hazm's *The Dove's Necklace*. It is possible therefore that the troubadours borrowed from this poetry but that what they borrowed was significantly assimilated and incorporated in a different social environment. It should however be noted that some scholars contest the claim that the 'langue d'oc' poetry derives from Arabic sources and prefer to stress its Latin origins.

Problems of influences. When the Albigensian Crusade destroyed most of the courts devoted to this aristocratic art, many troubadours took refuge in Spain and Italy where they had already exercised a marked influence on poetry. In the previous century, the marriage of Eleanor of Aquitaine, granddaughter of William IX, with Louis VII of France (1137), and the marriage of their daughters with the Counts of Blois and Champagne, had already led to the formation, in the France *d'oïl*, of the *cours d'amour*, devoted to the converse

of lords and ladies. Thus was stimulated a lyric poetry of the *trouvères*, which in its turn extended itself into that of the German Minnesingers.

Northern French Literature

Yet a literature written in the *langue d'oil*—let us say, to simplify, in the French language—was already in existence, with its own features.

It was first epic. Historians date the oldest of the *chansons de geste* in French from the late eleventh century: the *Chanson d'Isembart* about Isembart the renegade and the Saracen, Gormond, who at his behest invaded the territory of King Louis; the *Chanson de Guillaume*, with its Christian-Saracen combats ranging from Provence to Languedoc; and, above all, the *Chanson de Roland*, in which the author, known perhaps as Turol, embroiders on the theme of the defeat suffered by the rearguard of Charlemagne's army, homeward bound from Spain. Roland, the emperor's gallant nephew, his comrade the wise Oliver, the treacherous Ganelon, and Charlemagne, grave and majestic—the *Chanson*'s characters are not perhaps figures of great subtlety, but they are portrayed with remarkable vigour. Religious feeling, feudal loyalty and love of country are present here in an intimate mingling. The work is, of course, the product of a still unpolished period. But it and its fellows, chanted by wandering minstrels to melodic accompaniment, were so immediately successful that new episodes had to be added to them. An important stage was marked when, towards the late twelfth century, the minstrels' audience came to consist more of readers than of listeners. The whole epic was then revised with a greater care for composition and effect; rhyme, with its visual effect, was substituted for assonance. The legends were grouped into cycles. There was, however, some loss of the robust simplicity that had characterized the earlier works.

This is an indication of evolution in the aristocracy. Another is the emergence of a lyric poetry, original, interested mainly in the psychological analysis of love. In contrast to the elaborately worked short pieces of the literature *d'oc*, it displayed a preference for longer poems, written in octosyllables, for which there were inexhaustible sources of material to hand in Celtic themes. These were first introduced in the *Brut*, a poem composed about 1155 by Wace, canon of Bayeux, which recounted the adventures of Arthur and the Knights of the Round Table, as told by the fanciful historian Geoffrey of Monmouth. These were followed by *Tristram* and *Iseult*, lovers vowed to each other but sundered by fate, and with them came a new atmosphere of greater melancholy and dream-like quality. Their story found finished expression, in the decades 1162–82, in the work of Chrétien de Troyes. A professional writer, who had taken his first inspiration from Ovid, Chrétien sings of the exigences of a courtly love which demands to be set above all else (e.g. *Yvain*, and *Lancelot le Chevalier de la Charrette*). But he was also the author of a *Tristram*, which has not survived, and a *Perceval*, in which appears the theme of the Holy Grail, the miraculous vessel containing the Host, marking a transition from human love to the divine. Thus we watch the first appearance of

'romances' (literally, 'written in Romance vernacular', which eventually will lead to the modern psychological novel ('roman', in French). Chrétien's psychology is still sketchy, but there is enough of it to lift him above mere conventionality.

Another product of this development was the allegorical poem, the most famous example of which is the *Roman de la Rose*. Composed in octosyllables about 1230, this tells of the adventures of the author, Guillaume de Lorris, in a wonderful garden to which he comes in a dream, before he may pluck the rose that symbolizes the object of his love. It is a graceful fantasy, which death prevented him from completing.

The song in verse may have had popular origins, but all the work discussed above is, nevertheless, aristocratic in character. But the twelfth century also marked the advent of the first religious plays, enacted already outside the church; we must mention in particular the *Jeu d'Adam*, which evokes the drama of the Fall. Works such as this imply the existence of a large public, which was undoubtedly an urban one. What is here apparent is the dawn of a new literary era, in which bourgeois inspiration was to take over from the themes of feudalism.

Popular literature. This bourgeois spirit is chiefly characterized by its realism and a tendency to parody. Its principal genres are the *fabliau*, the animal poem, and the comic drama. The fabliaux are tales told to amuse, in verse. They are of great variety, not only because their themes are taken from diverse sources—Latin and possibly Persian and Arabic—as well as from observation of contemporary life, but also because they range in tone from great refinement to blatant coarseness, the latter, it is true, being the more frequent. Artful wives, deceived husbands, debauched clerics, and brutish peasants are the usual personalities involved.

Mention has been made of the ancient classical origins of the animal poem. Aesop's *Fables* formed the starting-point for a whole series of elaborations; there are new characters, the principal among them being the cunning Reynard the Fox. Parody of feudal manners breaks in. The episodes, as they multiplied, fell naturally into groups; the relation between them is something which modern scholarship is endeavouring to elucidate. Northern France, the Low Countries, and the Rhineland were the regions in which this genre flourished most abundantly.

The emergence of comic drama may be still more easily pin-pointed. It was inaugurated in Arras, in the last third of the thirteenth century, with the *Jeu de la Feuillée* by Adam de la Hale, a sort of satirical passing review of his fellow citizens; and the *Jeu de Robin et Marion*, in which the theme of the faithful shepherdess, true to her shepherd swain despite the machinations of a knight, is treated with amplitude and grace, and laced with some charming songs.

The urban spirit imparted its colour to the traditional genres. It was in Arras again that poetry now took as its theme incidents in the life of the

community, and the acts and gestures of prominent citizens. The end of the twelfth century saw Jean Bodel, stricken with leprosy, expressing in verse his nostalgia for the parties and banquets he had been obliged to forgo. The thirteenth century produced a proliferation of plays in mockery of the greed and hypocrisy of the citizens of Arras, their reluctance to pay taxes, and the coquetry of their wives. Paris, in the middle of the century, harboured Rutebeuf, essentially a bourgeois poet, whose rude vigour found its inspiration in its own time, not sparing even the author himself or his misfortunes. Rutebeuf was also a religious poet; his *Miracle de Théophile* describes the intercession of the Virgin on behalf of the clerk, Théophile, who, spurred on by ambition, had sold his soul to the Devil.

Another tendency in evidence in the thirteenth century was to the didactic. This inspired numerous so-called 'popular' poems, most of which are today unreadable: they included moralizing Bestiaries and Lapidaries, and 'Images du Monde' filled with marvellous precepts for princes and ladies. This fondness for the didactic was carried to the most tedious lengths of pedantry, even in works where it would appear quite alien: for example, there appeared about 1280 Jehan de Meung's completion of the *Roman de la Rose* in some 17,500 lines of ponderous discourse, without a vestige of grace.

Prose. Poetry continued, then, to find universal, and sometimes surprising, application. But the thirteenth century was also a period of development for prose. It began to oust poetry from the romance by an almost imperceptible transition from the octosyllabic lines rhyming two by two. Prose was the medium of the thirteenth-century *Lancelot Grail*, in which are combined several themes from Chrétien de Troyes, and in which the principal characters die—the twilight of that knightly society. Prose is used also, in conjunction with verses for singing, in a 'chant-fable', unique of its kind, which tells gracefully of the love of the squire Aucassin and the Saracen prisoner Nicolette (early thirteenth century). Form, theme, and even the names of the characters (Al Qāsim = Aucassin) are all indicative of Arab influence.

Finally there appeared the vernacular prose history. Once again it was the Crusades and the grandeur of kings and princes which inspired knights to recount the great deeds which they had witnessed: the Fourth Crusade and the taking of Constantinople was forcefully narrated by Geoffroy de Villehardouin; the personality and crusades of Louis IX were presented by his former vassal, Jean de Joinville, with singular spontaneity and evocative power (1309).

The French literatures have been dealt with at some length. This is because they were the first to develop, in the balanced, relatively rich, and politically stable country that was France. Until towards the end of the thirteenth century the works in 'Provençal' and French established and retained a position of predominance in western Europe. By then, however, other national literatures were already on the way to emancipation.

Spain

After France, Spain was the first country to possess a literature of her own. Thanks to the fact that epics, the first genre that flourished in the vernacular, found an early stimulus in the Spanish *Reconquista*. In the *Cantar de Mio Cid*, of about 1140, an unknown author celebrates the exploits of the exiled Cid, his conquest of Valencia and the marriage of his two daughters, with singular simplicity, force, and emotion. Of the same period is the *Los Siete Infantes de Lara*, doubtless an echo of the unknown author's domestic tragedy, in which seven brothers are killed, and then avenged by their half-brother. After these romances, the most striking feature of the thirteenth century is the development of didactic prose, a natural enough phenomenon in a country whose intellectual influence has already been emphasized. Alfonso X of Castille was both the inspiration and the promoter of prose works of history, jurisprudence, and science. His court, however, was a refuge for troubadours, and was instrumental in prolonging the glory of Provençal poetry; the king himself composed four hundred and twenty *Cantigas de Santa Maria* in Galician. French and 'Provençal' influence was also seen at about the same time in the emergence of poetry in Portuguese, the national features of which may perhaps be characterized as a certain tendency to satire and the frequent use of dialogue.

Italy

In Italy, French and Provençal influence prevailed for much longer. Italy was at this period a meeting-place, exposed continually to foreign influences, without a stable political centre, and it was probably natural that in such circumstances the awakening of the native muse should be slower. In the twelfth century, the *chansons de geste* in circulation were in French, albeit a French sprinkled with Italianisms, and in the early thirteenth century some of the most important of the Italian poets—Sordello of Mantua and Zorzi of Venice—composed their verses in the 'Provençal' tongue. The influx of refugee troubadours to the court of Frederick II served to reinforce this influence. But it was at this same court, nevertheless, and as a result of this contact, that there arose a learned poetry in Italian, the *canzoni* and the sonnets of the so-called Sicilian school, to be carried on in Bologna by Guido Guinizelli in the second half of the century. A more decisive influence was that of St Francis of Assisi: it was this which lay behind the popular *laudi*, an expression of the Italian soul in its lively and uninhibited sensibility; the most notable examples are the works of the Franciscan Jacopone da Todi. French continued in use into and beyond the last years of the century, as in Martino da Canale's *Chronicle of Venice*, and the *Book of Treasure* by Brunetto Latini. At the same time, however, there was evolving from the two Italian currents, the learned and the popular, the *dolce stil nuovo*, which aspired at once to formal harmony and sincerity. The nature of the inspiration tended towards an increasing degree of exaltation: the Lady who is praised is a woman, but she is also, as it

were, the personification of knowledge and poetry, the inspirer of virtue. In all of this, and perhaps even more in the emergence simultaneously of a Florence of great wealth and elegance, we can discern the smoothing of the way for the coming of Dante. It is little short of the miraculous that, in what was almost its first manifestation, Italian literature should have made its mark with such a master.

Dante. By his life, Dante Alighieri is principally a man of the fourteenth century: born in 1265, he was involved in Florentine political disputes, and exiled in 1302. It was in the years between that event and the approach of death in 1321, years which he spent wandering from one town to another, that he composed his *Divina Commedia*, the work which by a consensus of admiration ever since has been termed 'Divine' indeed. The poem defies summary description. The theme is of course well known: the meeting of Dante, lost in the forest of the passions, with Virgil, their journey through Hell and Purgatory, and the eventual entry of the poet into Paradise where the beloved Beatrice awaits him. What should be emphasized is the number of diverse currents of which this work, resembling in its immensity and harmony the great cathedrals and philosophic *Summae* of the thirteenth century, represents the fusion. The idea of the mystic journey derives simultaneously from Latin writers (from Virgil himself), from the Arabs, and from the *Spiritual Itineraries* of a St Bernard or a St Bonaventure. The great contemporary conflicts are reflected: the struggle for supremacy between Papacy and Empire, the controversy between Observants and Conventuals, the rending of Italian cities, and many others. But a whole-hearted adoption of the symbolic, a purified conception of love, an aspiration to serenity of spirit enable Dante to rise far above the play of contemporary passions. Moreover, what must further compel our admiration is the harmony, the rhythm, and the formal perfection achieved by one who was a born writer, yet was not born into a great literary tradition.

Germany

The course of events in Germany was different. The Germanic peoples were haunted by an ancient epic tradition that yet proved inadequate as a starting-point for a national literature. As late as the thirteenth century, most of what was written in German consisted of adaptations from the French, following up developments which were usually some twenty-five years old. Contacts established at the time of the Crusades, and influences which spread into Germany via the Low Countries and Rhineland, explain the charm exercised over Germany by a more highly developed and refined culture.

The Nibelungenlied. Although it is doubtful if the Germanic oral epics played in the early Middle Ages the European rôle attributed to them by Grimm and Gaston Paris, the fact of their existence remains unquestionable; it is proved by the presence of the *Hildebrandslied* (late eighth century) and the Latin poem, *Waltharius* (tenth century), and by the emergence of similar themes in

the early medieval poetical fragments inserted in later redactions of Scandinavian works. In the twelfth century, certain of these epics were written down in German: the Dietrich von Bern, for example, and the *König Rother*. Most important of all, the *Nibelungenlied* was, after long elaboration, set down in its entirety in the thirteenth century. Incidents of the great invasions can be recognized in these narratives, which are full of tales of dark revenge and themes of pagan origin. But a certain sense of composition, an interest in psychology, and even a veneer—albeit a very thin one—of *courtoisie* show that the influence of the French epics was not entirely lacking.

Foreign influences. It is indeed true that the French epic had its German adaptations: the *Karlslied*, for instance, of about 1130, corresponds to the *Chanson de Roland*. Later the French romance had a long period of popularity: around 1200, Hartman von Aue began to make known in German the works of Chrétien de Troyes; then came Goetfried von Strassburg's *Tristan*, and the *Parzifal* of Wolfram von Eschenbach, which echoed the French works, and at the same time also brought to them a certain additional element of mysticism and passion. The Provençal poets had their counterpart in the minnesingers, the most justly famous of whom was Walther von der Vogelweide. (Pl. 33.) In the second half of the thirteenth century there was a certain decline, and the *Meistersingers*, who were not of the same calibre as the bourgeois poets of France, are not altogether free from traces of a somewhat ridiculous pretentiousness.

The Low Countries

In the Low Countries, French influence was felt even more markedly than in Germany: a fact of which the economic and, in some instances, the political ties that bound them to France, and the 'Francophile' attitude of the aristocracy and the Flemish upper middle classes, are sufficient explanation. But in the late thirteenth century there nevertheless emerged a Netherlandish literature, the chief representative of which was Jacob van Maerlant, born in the Franc de Bruges (i.e. the rural district of Bruges), and author, in that didactic-satirical vein so dear to the bourgeoisie, of works such as the *Flower of Nature* (*Der NATUREN BLOEME*) or his 34,000-line *Verse Bible* (*Rijmbibel*).

England

In England, matters had not reached even this stage. The Angevin monarchy, the aristocracy, and the higher ranks of the clergy, often of continental extraction, fostered a flourishing literature in Latin and French. The twelfth and thirteenth centuries produced a few English romances, but though inspired by legends from Scandinavia (e.g. *Havelok and Horn*), some were on the whole fairly French in manner. Middle English literature was to blossom out only in the fourteenth century.

Celtic and Scandinavian Literature

There remain two literary streams for both of which a chronology is particularly difficult to establish: the Celtic and the Scandinavian. Written transcription of the Irish epics dates from about the twelfth century, and of the Icelandic sagas from about 1260, but both these had already had a long history of oral transmission. Their themes reflect a very much earlier civilization, still pagan and crude, but in the continental literatures into which they infiltrated the place they occupied was, as we have seen, an important one.

Conclusion

The reflection of their *milieu* and their period—all these works are this in a manner that is significant. The transition of national literatures to independence from the Latin tradition was accompanied by changes in social structure; they had also to free themselves, and did so in varying degree, from the predominance of French literature. This predominance can be explained in terms of a self-awareness and an equilibrium to which France attained earlier than most. In addition, these works throw light on the stages of a society's cultural development: the epic and the lyric precede the careful, satirical observation of reality; poetry takes shape before prose. Finally comes the production of a few great masterpieces, above all of the *Divina Commedia*, in which men were ever afterwards to recognize their image.

NOTES

1. Dr S. A. Iman, however, believes that the author has compared the Umayyad traditional imitation of pre-Islam odes for linguistic reasons with the urbanization generally longed for. At no stage during the period in question was there genuine 'mocking of the city-dweller'.
2. Dr Iman feels that literature of the period, as shown by Ahmad Amin, hardly supports this hypothesis.
3. See page 715.
4. Professor Jussi Aro singles out, as an example the whole body of traditions coming from Saif ibn Omar al-Asadi, who wrote on the early Islamic wars mainly to the greater glory of his own tribe, and the universal tendency of Abbaside chroniclers to denigrate the Umayyads. (cf. in general, Wellhausen, *Das Arabische Reich und Sein Sturz*, Berlin 1902.)
5. Professor Aro feels that more stress should be laid on the fact that the presumably very rich and important literature of Sassanian Persia has come to us in a deplorable fragmentary state. We are better off with the religious literature of which, in addition to *Denkart* and the 'Visionary Account of Heaven and Hell (*Ara Viraf/z Namak*)' at least Bundahishn ('Primordial Creation') and *Dātastān i Mēnōk i Khrat* ('The Decisions of the Spirit of Intelligence') should be mentioned. Of profane literature, we still have the 'debate' *Drakht asōrīk ut buz* ('The Assyrian [palm] tree and the goat') mentioned p. 238, which seems to develop an old Mesopotamian theme. (cf. J. M. Unvala, *Bulletin of the School of Oriental and African Studies*, II, 637-78, and W. G. Lamber, *Babylonian Wisdom Literature*, pp. 151 and 154.) *The Dialogue Husraw ut Retak*, 'Chosroes and the page-boy', contains interesting information of the traditional Iranian curriculum of studies. *Ayyātkār i Zarērān* belongs to epic literature, and *Kārnāmak i Artakhser i Pāpākhan* is a historical romance treating of the first Sassanian king.

There is also a short account of the origin of the game of chess etc. A part of Sassanian

profane literature has been preserved in Arabic translation (Ibn Moqaffa's *Kalila wa-Dimna*, the fragments of *Andarz*-literature collected by the writers on *adab*, the *Khwārdy-Nāmāk* or *Book of the Kings* in the writings of Arabic historians, etc.) as stated in the text. (cf. on Pahlavi literature, Tavadia, *Die mittelpersische Sprache und Literatur der Zarathustrier*, Leipzig 1956, and current histories of Persian literature, especially the *Handbuch der Iranistik*.)

6. At times, the Byzantine historians made remarkable efforts to carry the search for historical causation much farther than the combination of Divine will and human whim. For instance, an anonymous chronicler (the so-called Continuator of Theophanes) discarded the explanation of the Arab invasion as a scourge of God, and looked for the economic reasons that forced the Arabs to move. (R. Lopez.)

CHAPTER XIV

ARTISTIC EXPRESSION

I. THE FAR EAST

ON the eve of the fifth century, eastern Asia was living under the influence of the culture of the Han dynasty. However, from this common background there emerged the two great original arts of the Korean goldsmiths and the Japanese coroplasts.

In Korea, artists retained the animalist traditions of the steppes and skilfully married the taste of the barbarians of the north with the refinement of the Chinese engravers. By their style and treatment, works of art from Silla, one of the three Korean kingdoms, are worthy counterparts of those of the Merovingians: belts of perforated gold plates, decorated with trinkets, rolled gold-leaf fishes, blue glass cylinders or green jade 'tusks (*magatama*)'; earrings with large, solid rings and fine pendants edged with granulations; crowns of fine gold laminations—skilful constructions which are shaken by the breeze, making the tassels and precious stones glitter.

In Japan, national art took the form of funeral statuettes, which decorated the brick cylinders (*haniwa*) acting as palisades for the foundations of the Great Burial Places. An entire world of figurines—warriors and guardians, servants and waiting-maids, domestic and farmyard animals, hunting animals and horses, palaces and granaries—enable us to picture the daily life of the first centuries of Japanese civilization. Unlike the artists who created the funereal statuettes of the Han dynasty, which defined man in his universality, the Japanese coroplasts sought individual experience caught in its most personal expression.

In China, the art of the Han dynasty suffered from the after-effects of the barbarian invasions and the diffusion of Buddhism. The foreign occupation and the miseries accompanying it engendered a class of opponents to the new order of things—nationalists, aesthetics, philosophers, artists, poets and calligraphers, amateurs and connoisseurs in all subjects. The new religion, for its part, modified the content of works and enriched modes of expression both in architecture and painting and sculpture. Thus, there developed simultaneously a purely calligraphical elegance and a glittering luxury of colours. The T'angs and the Fujiwaras were to bestow their preference exclusively on the glamour of the latter, whereas the Sungs and the Shoguns would emphasize subtleties of the former.

A. Architecture in China, Korea and Japan

On the eve of the Buddhist triumph, Chinese architecture was still subject

to the Confucian rules which governed the lay-out of all public and private buildings. The 'housing unit' consisted of a closed rectangular courtyard, the north side of which was formed by the main building, which was usually flanked by two lateral buildings and access to which was by a door on the south side.

Protection was provided by massive walls reinforced by well-guarded gates and watch towers. Places of recreation—imperial parks and private gardens—were adorned with small pavilions, sometimes connected to one another by a covered alley, or high terraces and belvederes. Dwellings, whether those of princes on a more modest scale, were constituted by a number of 'housing units' joined together, always along a north-south axis.

Palaces and public buildings had provided shelter for Confucian worship and they did the same for Buddhism. So far as some were concerned, the Buddha and his relics were adored in the Imperial pavilions for others, it was the terraces or watch towers. While the pavilions were put to this use without any major alterations, the watch towers were modified so as to evoke the structure of the *stupas*. So it was that the pagodas came into being; at first they were massively built in stone or brick, but very soon they were made of wood, accumulating their successive roofs with raised edges supported by cunning corbel consoles and gathering themselves up in a graceful flying movement. Similar buildings of wood were introduced into Korea as from the fourth century, but it would appear that this country maintained the tradition of pagodas in stone and brick much longer, while at the same time introducing local innovations such as making the reliquaries solid, whereas in China they were hollow.

The buildings which survive in Japan provide us with the best examples of Buddhist architecture in eastern Asia. The artists and architects who had come from Korea as servants of the new religion and holders of the Sino-Korean formulae discovered a local tradition which expressed itself in the first Shinto temples. That of Izumo was undoubtedly built as a copy of the palaces of early Japan. The building, of wood, is rectangular on a low pile foundation; the roof has two straight slopes with imposing corner rafters and the thatched roofing rests on bent rafters. However, the Buddhist temples did not have to adapt themselves as in China; they were replicas of the buildings on the mainland at the beginning. The temple consisted of several buildings: a main hall (*hondo*) or golden hall (*kondo*) for the adoration of the Buddha, a reliquary *stupa* or pagoda (*to*), and a covered corridor (*kairo*) like a cloister opening to the south by an inner gateway (*chumon*). The whole was surrounded by a wall, in the southern façade of which was the great gateway. To this could be added lecture halls (*kodo*), dormitories (*sobo*), a belfrey (*shoro*), sutra repository (*kyozo*) and a refectory (*jikido*). The oldest lay-out, like that of the Shitennoji, placed the pagoda in front of the main hall in a north-south axis running through the gates. In the Horyuji, as from the seventh century, a new system is to be found. The pagoda and the main hall are situated on each side of the

axis, manifesting a dissymmetry which is compensated for by the sober proportions of each building.

Over the centuries, this plan underwent variations due to the gradual substitution of parish for monastic life. Initially, the public worshipped in the courtyard before the main hall (*kondo*); this was the case at the old temples Asukadera, Horyuji and Yakushiji. The necessity for a larger pantheon, imposed by the arrival of the new sects, involved a modification of the iconostasis. As a result, the building was extended, and as its façade increased in length, it was attached to the rear of the corridor, as is shown by the Toshodaiji (middle of eighth century). The faithful, who had formerly prayed in the open air, soon profited from an increase in the amount of shelter; in order to give them shelter, a second hall was built in front of the main hall (*hondo*). Lastly, in the final stage of evolution, the two halls were united under a single roof, as in the case of Hokkido and Todaiji, and the building then reassumed a less extended plan, with the iconostasis in the background. In the ninth century, the Tendai sect, too, adopted the square plan, for the monks had to recite their prayers walking round the altar; the latter, therefore, took the central position as at Enryakuji.

Whether built on a rectangular or a square plan, these not very lofty buildings melted into the landscape, and the interplay of horizontal lines, emphasized by the wooden floors which had replaced the mud floors used for the ambulatory, was further accentuated in subtle contrast by the tall silhouettes of the pagodas. Thus it undoubtedly was in China and Korea, although wars and disturbances had caused the destruction of the majority of the Buddhistic and Imperial buildings. There are, however, a few documents which can help us to imagine the sumptuousness and the dimensions, which were sometimes extravagant. Under the Suis, the name of Yang Su architecture brings to mind the splendours of the Palace of Lo-Yang, while that of Yu-wen K'ai recalls the cunning construction of the vast rotating pavilions. Under the T'ang dynasty, the colossal Buddhas several dozen metres high were protected by large buildings imitating the Throne Hall. Palaces, religious communities, pavilions and halls formed complete towns on their own. Religious foundations became so numerous that they absorbed the entire artistic energy of the period, both for mural paintings and for statues.

The Buddhistic buildings reflected the resplendent luxury of the T'ang dynasty, and the Fujiwaras were able to draw inspiration from them, while imparting to their temples a less imperial and more aristocratic appearance. As in China, the Tendai and Shingon had already substituted rural communities for urban ones. The mountainous refuges constituted an invitation to adapt the plan to the terrain. The Tendai temple of Enyiakuji at Mount Hiei and the Shingon temple of Kongobuji at Mount Koya had inaugurated the dissymmetric plan. Moreover, the adherents of Tendai, fighting against formalism, returned to the little building covered with bark, while the Shingon faithful invented a variety of pagoda known as

toho-to—round reliquaries with a square lower corridor and an upper circular corridor.

The popularity of these sects soon diminished with the Fujiwaras, who preferred the sect of the Pure Earth (*Jōdō*), which imposed fairylike pavilions in the image of the paradise of the West. The best example of this is the Pavilion of Phoenis (*Hoo do* of the *Byodo in*) built in 1053 and consisting of a central pavilion with two wings connected by short covered corridors. The whole, exceptionally harmonious and wonderfully graceful, is reflected in a pool full of lotus. In addition to the multitude of private temples, instruments of power of the Fujiwaras, there were the fine residences of the nobility. The first of these, with their numerous pavilions (*shinden*) placed symmetrically, gave place to dissymmetric groups built on a site which had itself been transformed into a garden. The main pavilions of Chinese type covered with glazed green tiles were accompanied by outbuildings of the Japanese type covered with cypress bark.

The luxuriousness of the T'ang and Fujiwara dynasties was succeeded by the elegance of the Sungs and shoguns. The Sung capital of Pien ching (now K'ai-feng) became the model of this type and was to inspire the Korean vassals of the Koryo in the construction of their city Pyong-yang. The new capital was apparently less grandiose than that of the T'angs, but the buildings were more elaborate, and audaciousness in building was substituted for mass effect, as is witnessed by the elegant curves of the roofs.

In Japan the new Chinese style of the Sung dynasty (*tenjiku-yo*) was to confront the national style (*wa-yo*) which had been characteristic of the taste of the Fujiwaras. At the end of the eleventh century it was adopted for the reconstruction of the Todaiji—for reasons of economy. All the beams and rafters are cut to a standard size to reduce labour costs, and the building took on an austere, plain appearance. This simplicity, which appeared in the eleventh century, was inspired in the thirteenth by the rusticity of the Zen (*ch'an*) communities, which flourished under the shoguns. The Chinese genre (*kara-yo*) was adopted for the Kenchoji, founded near Kamakura by the Chinese Tao-hung (Japanese Doryu) and for the Engaku-ji, the reliquary (*shariden*) which is a model of its genre. This style was to have a great success, particularly in the fourteenth century, but was not destined to eclipse the traditional style (*wa yō*) on that account.

Whatever may have been the architectural variants imposed, both in China and Japan, public and religious buildings and the pavilions of the aristocrats were marked by the tastes of the Sung dynasty. The roofs with their abrupt curves and highly raised corners rose like an emblem of elegance above the straight-lined roofs retained by all the other buildings of the epoch.

Lay and religious architecture in the Far East could not do without parks and gardens. Under the T'ang dynasty, it was usual to devote one-sixth of an area to buildings, one-third to bamboos and the remainder to stretches of water. The ancestral love of nature had already flourished under the Hans with

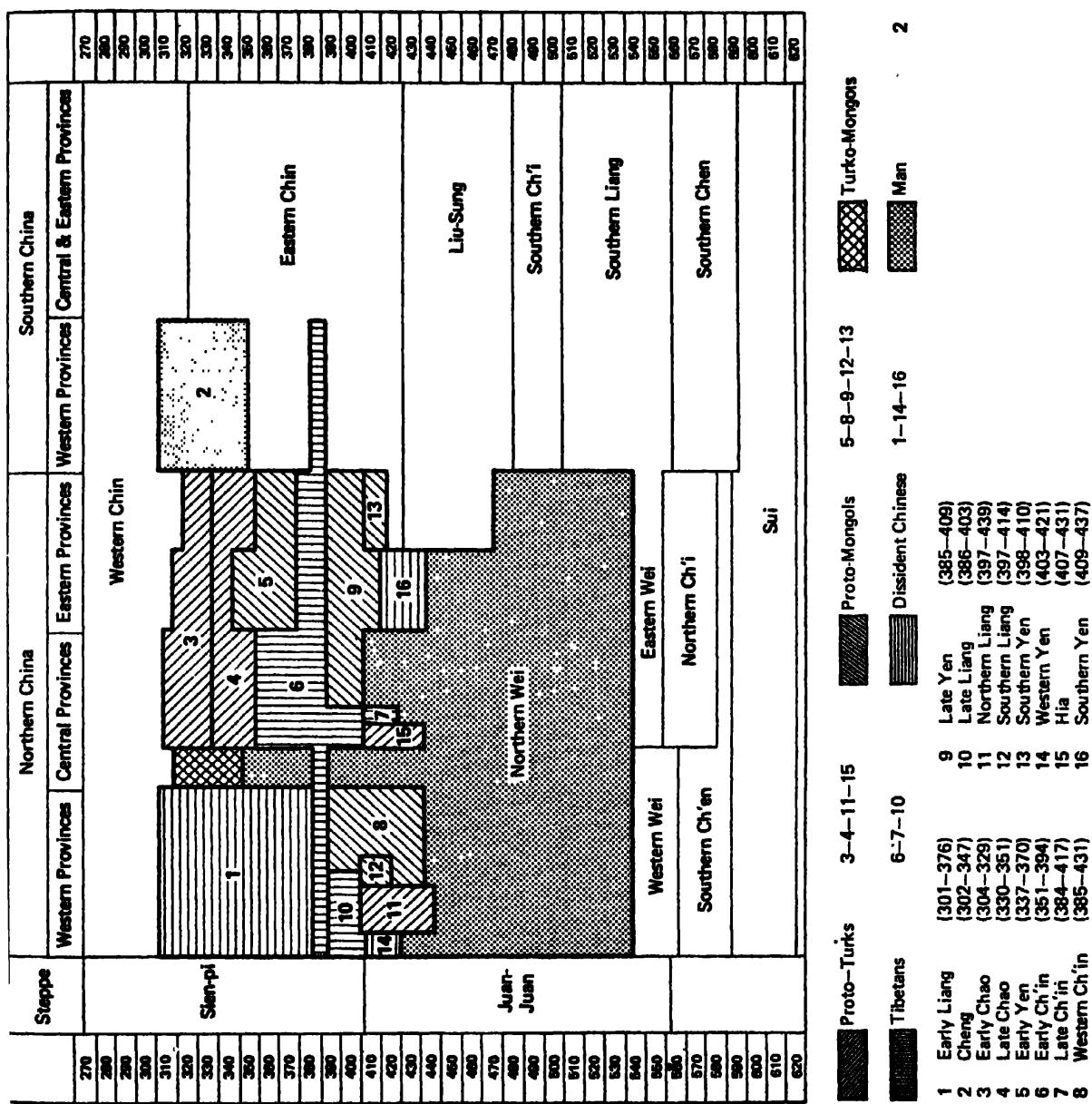


CHART 3. Peoples and dynasties in China, third to seventh century A.D.

the Confucian awareness of the bonds of solidarity between man and nature. In the Middle Ages, Taoists and Buddhists were to emphasize still further their interest in landscapes. It was in the wonderful mountain ranges of the Kiang-si that Hui-yuan (333-416) founded his Lu-shan monastery; it was while dreaming of the Isles of the Immortals that Li tu-yu (787-849) had his immense park laid out. But whereas the former adapted himself to the landscape, the latter reconstructed it. This is the very type of imperial park described by Marco Polo:

‘Sometimes the King would set the girls a-coursing after the game with dogs, and when they were tired they would hie to the groves that overhung the lakes, and leaving their clothes there they would come forth naked and enter the water and swim about hither and thither, whilst it was the king’s delight to watch them; and then all would return home. Sometimes the king would have his dinner carried to those groves, which were dense with lofty trees, and there would be waited on by these young ladies.’

Imperial and aristocratic parks had to include many stretches of water, foot-bridges, lotus pools, many-scented trees, and oddly shaped rocks (*houa-che*). Banana trees and other plants added to the picturesque character of the place.

Gardens cultivated by private persons contained, in a more simple fashion, a grove of bamboos, a stream, one or two rare stones, and sometimes a terrace or little hut for contemplating the moonlight or listening to music. The literati, taken up with studious and meditative reflections, were very fond of rustic gardens. Ssu-man Kuang describes his garden as follows:

‘When I tire (of my studies) I take my rod and go out fishing, or else I go and gather medicinal herbs in my long cape, or I dig channels to conduct water to the flowers, or I take the axe to trim the bamboos. I wash the heat from myself, rinse my hands and ascend an eminence from which one has a wide view. Thus I ramble about as I please when I am not otherwise occupied. The moon often appears brilliantly clear, and the wind brings coolness. No one can prevent me from rambling or from resting; my ears and eyes, my lungs and entrails are entirely my own, and I am dependent only upon myself. I know no greater joy between heaven and earth; therefore I call my garden *Tu Lo Yüan*, “Garden for My Own Pleasure”.’

At the time when Chinese civilization was introduced into Japan, the taste for gardens was in tune with the profound love of nature felt by the Japanese. The development of these gardens was mainly favoured by the installation of the capital in the magnificent basin of Kyoto, surrounded by wooded slopes. The gardens were often based on well-known sites such as that of Rokuyo-in, which calls to mind the long, sandy beach of Amanohashidate. The tea ceremony introduced by the Zen meditative sect resulted in the building of ‘tea pavilions’ (*chashitsu*), in a rustic style and surrounded with greenery. The frugality and discretion which were fashionable in the thirteenth century

bestowed preference everywhere on small gardens, where each detail of nature was represented by a symbol. These symbolical gardens, like the miniature gardens, were most fashionable under the Ashikaga dynasty (1333-1573).

B. Buddhist Influence on Chinese Sculpture

The first Buddhist images spread through eastern Asia after having crossed the Indo-European kingdoms of Serindia. The Graeco-Gandharian and Kushano-Bactrian types first inspired the Khotanian artists of Aq-terek. A little later, the Kuchian artists of Tumshuq were subjected to the influence of Gupta art. The echo of these more rustic and more rounded forms appeared in China in certain reliefs decorating mirrors and in gilt bronze statuettes, the oldest of which dates from 338. Central Asia, the cradle of the eastern branch of Buddhist art, received in return, all along the Road of Silk, the influences of China: a mixed art, with dominating Iranian or Chinese influences according to the epoch and place, was to flourish in this way at Khotan, Kashgar, Turfan and between the two major extreme centres of Bamiyan in Afghanistan and Tun-huang at the gates of China. As soon as they adopted Buddhism, the barbarian sovereigns, copying their neighbours, built the great sanctuaries of Yun-kang near Ta-t'ong and Long-men near Lo-yang. The oldest grottoes of Yun-kang were founded in the middle of the fifth century. The Buddhas and bodhisattvas retained the Greek profile of their prototypes, but the drapings have the heaviness of a sort of clothing to which the sculptor is unaccustomed. As from the sixth century, particularly at Long-men, the faces gain in refinement, and the smile conveys the spirituality acquired by the artists, while the draperies are arranged in geometrical folds and, by their stiffness, accentuate the tenderness of the facial line. The first statues had benefited from a rounded style similar to that of the imported models; the next ones exalted the spirituality by accentuating the lines of the folds, creating an angular and pointed—one might almost say a flamboyant—style. These works, inspired by a profound feeling of piety and tenderness, are the equal, although preceding them by several centuries, of the achievements of the Gothic art of the West, retaining, as they did, the memory of the Hellenistic canon and the Graeco-Roman drapery, since, like them, they were inspired and animated by an ardent faith. The new Buddhistic aesthetics invaded traditional sculpture. The groups of animals lining the funereal alleys perpetuated the iconographic types of the past, but the stylized realism of the foregoing centuries was superseded by a stylism aimed at expressing tension. Winged lions and dragons, like those on the tomb of the Hsiao Hsious of the Liangs (518) give proof of a schematism comparable to that of the Buddhistic statues. As for the funereal statuettes (*ming-ch'i*), these adopt a slender shape with apparently lengthening lines, something along the lines of the wasp waists of barbarity. Court ladies with fine corselets, warriors with rich leather clothing, horses with pronounced silhouettes and camels with ungainly walks—all bear the mark of a new stylization.

Chinese Buddhistic art of the fifth and sixth centuries imbued the entire production of eastern Asia. In Korea, at the court of the Kokurye, the magnificent trinity of Amithaba dating from 571 recalls the style of the northern Wei's. At the court of Silla, as at that of Paikche, it is the influence of the Ts'i's from the north, with their gentler forms, which appears in one of the masterpieces of Asiatic sculpture, representing Mirok, the tender-hearted bodhisattva of the future, commonly attributed to the seventh century. Seated in meditation, with the right leg placed at right angles on the left knee, with the right hand raised to support with the fingers the slightly lowered head, this Mirok has frequently served as a model, and we find it again in the famous Japanese statue of the Koryu-ji.

For Japan used a number of Korean statues as a source of inspiration. Thus came into being the famous Kudara Kannon—a long silhouette of Avalokitesvara with supple movements and the face radiating sweetness—and the seated bodhisattvas of the Chugu-ji, with their astonishingly graceful and simple curves. (Pl. 34a.) Through the identity of the forms, however, the national temperaments appear in each of these series. To the plastic humanization of subjects inaugurated by the sculptors of the northern Ts'i dynasty, the Koreans added a certain personalization of the expressions, which the Japanese, in turn, went to extreme lengths to individualize.

The accession of the T'ang dynasty transformed Chinese sensitivity. Under the Sui dynasty, the philosophical concerns of the T'ien-t'ai had already introduced an expression of intellectual gravity which foreshadowed the humanization of the gods. This became complete in the seventh and eighth centuries. Amidism contributed further to bringing the divinities, whose benevolence was expressed by gestures of quite worldly charity, even nearer. Esoterism, evoking strictly graded anthropomorphic forms, also chose its examples from among the terrestrial fauna. To this humanization of images also corresponded the apogee of Chinese power. The divine authority, formerly an 'authority recognized' by the sovereign, became the authority of the emperor himself. Lastly, from the cosmopolitanism of the epoch, there emerged the Indian influence of the Gupta nudes. Two types of statuary then emerged; one, of a markedly Chinese character, expresses with an almost classical realism the grandeur and power of the masters, as in the case of the Great Buddha of Long-men (Pl. 36a); the other, which was rarer and more Indianized, represented languid god with supple bodies half dressed in a wet cloth which brought out the beauty of their youthful bodies. (Pl. 34b.) In addition to these chief types there were those which expressed the epic taste of the epoch: figures of guardians of the Law, with exaggerated muscle formation and stern features. To the religious tension of the sixth century there succeeded the force and thrill of humanity. But while these features bore witness to great virtuosity of the chisel, they also announced the end of great statuary. Under the Sung dynasty, the sculptor reunited the two currents of power and flexibility in a single style which, in spite of the reality and elegance

of the forms, bordered on grandiloquence and affectation. Soon, emptied of its content, this art was to fall back into place among the works of craftsmen, and whether in stone, wood or iron, the statues lost their sacred aura. Secular sculpture was to suffer the same fate, but before disappearing it provided a rich repertory of funerary statuettes; court ladies in languid poses, with straight backs and wearing a hennin on their heads, lady musicians portrayed in action, with one arm in a gracious sweeping movement and the head thrown back in musical enchantment, polo players, gesticulating warriors, grimacing demons—all bearing witness to the brilliant life of the court of Chang-an. (Pl. 35.)

Korean and Japanese productions were nourished from the sources of T'ang art. Korea, unified by Silla and a vassal of China, derived Gupta influence from the latter but retained archaic features, including a certain tendency towards symmetry in the folds, which gave its work an individual character. At the sanctuary of Sok-kulam (752) a Buddha displays his majesty, surrounded by a series of bodhisattvas in bas-relief, the finesse of which surpasses Chinese examples of the epoch. Unfortunately, as from the ninth century, Buddhistic images became stereotyped as a result of a disaffection undoubtedly caused by the Chinese proscription of 845.

In Japan, T'ang tastes chiefly influenced the Buddhistic art of the eighth to tenth centuries, but sculptors were still able to retain their faculty of individualization, in which they were assisted by the example of the Koreans and also perhaps by the fact that the materials used—wood, bronze and lacquer—allowed their fingers and wrists more play than did stone. The statues of the Todaiji and Kofuku-ki and the bronze triad of the Yakushi-ji have certain characteristics which are typical of the beginning of the T'ang dynasty: physical realism, faces with pleased or irritated expressions, and the evidence of a great fervour. The statues, carved from solid wood (*ichiboku*), of the Toshodaiji already have the massive appearance and the close-fitting draperies of middle T'ang art. But in addition the Chinese technique of dry lacquer (*Kanshitseu*) enabled the Japanese artist to make veritable portraits by imparting an intimate aura to the faces: examples are the Asura of the Hachibutens of Kofukuji, the caricature masks of the Gigaku theatre, and the unforgettable portrait of Ganjin, founder of the Toshodaiji. As from the ninth century, under the influence of the Shingon monks there was a reaction against massiveness. There was a tendency for the Buddha's silhouette to become elongated. These more austere works gave rise to a complex iconography dominated by the symbolical representation of Powers overcoming evil. The wood carvers of the Heian epoch also displayed great virtuosity, particularly in the decoration of small portable chapels. Confronted by the flood tide of Buddhistic production, Shintoism in turn adopted anthropomorphic representations. To this we owe, after a few unfortunate attempts, the magnificent portraits of Ussugi no Shigefusa, in which the baggy trousers (*hakama*) and the huge head-dress (*ebahi*) provide unexpected volume to the composition of

the silhouette. With the shoguns of Kamakura sculptors such as Unkei and Tankei attempted to revive the realism of Nara, but the acuity of their style and the tension of their treatment brought them to a dead end; the decline began after the great, but already effete, work of the Buddha of Kamakura.

C. Buddhist Painting

Like sculpture, Buddhist painting first evolved in central Asia. It is probable that an indigenous painting once flourished on the western borders of this region for, while the art of the caravan centres of the Tarim still remained under the influence of neighbouring peoples, the Indian, Iranian and Chinese currents of influence do not suffice to explain the originality of the first Bamiyan frescoes and of the magnificent Sogdian paintings of Pendjikent.

The first Qyzyl paintings of the fifth and sixth centuries betray Indo-Gupta and Iranian influence through their marked relief enhanced by discreet colours. In the seventh century a second series of works reveals the preponderant influence of Iran, with less marked relief and more striking colours, as at Fundukistan and the stuccoes of Tumshuq. The refinement of these paintings, with their rich compositions showing fine ladies and elegant knights are such that we may speak of Kutchian art. Little by little the Indo-Iranian artistic complex transformed itself into an Irano-Chinese art, the finest examples of which are to be found at Bezeklik and at Murtuq, near Tourfan. In spite of its imposing presence, Buddhism was not the only religion to fecundate the art of these regions. Manichaeism, adopted in the eighth century by the Uyghurs, who were then masters of the area, inspired magnificent miniatures where the donors may be seen with their imposing mitre-shaped hairdresses; Nestorianism, more discreetly, has left us a few works of Iranian and Romano-Byzantine inspiration.

At the Chinese end of these two roads, Tun-huang sums up the full evolution of Buddhist painting. On the walls of his hundreds of grottoes, founded in the fourth century, thousands of pictures of Buddha and his assistants succeed one another, together with many scenes recording the life of the Saviour, his sermons, parables and miracles in the surroundings of everyday life: relays of horses, fires, river-crossings, sales of rice and meat, halts at an inn. The paintings of Tun-huang are not only a vast record of Chinese life from the sixth to the thirteenth centuries but also, contrary to what we are told by those who only know them in reproduction, works of great artistic quality. The oldest paintings happily marry ash-green, black and vermilion. The slender silhouettes of the figures, following the fashion of the barbarians who periodically dominated these temples, add a note of distinction to the spirituality of the characters.

As was the case with sculpture, forms were humanized under the T'ang dynasty, and colours became more varied with all the tints of warm and cold tones. As subjects, the triads, and groups of Buddha and bodhisattvas were

superseded by pictures of the marvellous paradise of Amithaba. Now, there were only richly decorated palaces, gardens and covered galleries frequented by richly dressed nobles accompanied by servants loaded with offerings; there were lakes, pools full of blooming lotuses, summer houses and stages on which danced girls with flowing scarves. The crowd of participants were imbued with the sensuality of Indian influences and animated by the epic inspiration of the T'ang dynasty: the warriors with their powerful muscles and glittering weapons were just so many reflections of the military might of the dynasty, while the gift-bearers—men in court dress, and women with their cunningly-tiered, flowered head-dresses—bore witness to the luxuriousness of the Chinese court.

Under the influence of esoteric sects, terrible divinities and threatening demons invaded the walls and supercharged the composition which, by the thirteenth century, ended by declining into imagery.

Japanese painters represented the same triads, the same series of thousands of Buddhas, and the same paradises as the Tun-huang artists. We know of authentic examples, which may be Chinese such as the embroidered banner of Chuguji, or perhaps Korean, like the lacquered panels decorating the Tamasushi. Initially (seventh century) the style was somewhat abstract and the forms unreal, but at the end of the century, under the influence of Sui dynasty and the first members of the T'ang, the forms became humanized and more realist, as in the case of sculpture. The best example of this is the set of murals at Horyu-ji: the characters have a powerful silhouette and a virile expression, while firm, sensitive drawing accentuate a moving spirituality. The painting of Kishijotan shows that the primitive techniques persisted in the attainment of depth effects through a play of shadow. On the other hand, the portraits are imbued with the beginnings of realism: in that of the regent Shōtoku we already have the interplay arising from the superimposing of full-face and profile aspects. At the beginning of the Heian epoch, the ritual of the esoteric sect of Shingon made necessary the fabrication of mandalas: diagrams of divine hierarchies. The artists, in spite of the strict rules of iconography, were able to make true works of art of them both by the selection of shades and by the fineness of their drawing. The influence of the art of the end of the T'ang dynasty appears clearly in the great pictures of divinities such as that of the protective God of Buddhism (Juniten) at the Saidiji of Nara. In the eleventh century, at the very height of Fujiwara power, the pictures of the Paradise of the Pure Earth of Amidism appeared alongside the terrible pictures of esoteric Buddhism. The descent of Amida towards his followers (*saigo*) became the favourite subject; the various episodes were pretexts for truly Japanese portraits, architecture and landscapes. This is the case with the Ren go of the Amida triad at Kokke-ji of Nara; as for the representations of Nirvana, these were the occasion for displaying all the pomp of an expensive funeral, the pathetic, but also the serene, character of which is shown.

Towards the twelfth century the influence of the Sung dynasty made itself felt through a more accentuated and more nervous graphism, with black lines

encircling the more emphasized details. The *raigos* of Amida of Wakayama offered great vigour of design and brilliant colouring, but this was no longer the sumptuousness of the former Fujiwaras. On the other hand, the portraits of monks constitute one of the finest Japanese productions. The assurance of Jion Daishi, the fervour of Zemmui and the conviction of Gonzo, portrayed with extraordinary fidelity, bear witness to the Japanization of a Chinese subject.

Buddhism contributed to the technical development of painting by the introduction of horizontal-type rolls (a souvenir of the illustrated manuscripts —*ingakyo*) and vertical-type rolls (an echo of the banners which flapped in the wind on feast days). In addition, through the intermediary of the Ch'an (Jap. Zen) sect, it provided a new type of outlook to the landscape painters. Lastly, while its treatment of shadows and relief disappeared, its predilection for full, supple and rounded shapes was to remain a part of Far Eastern aesthetic taste.

D. Secular Painting

Until the period of the Six Dynasties, painters retained their status as craftsmen designers and colourists. But with the barbarian occupation there occurred a phenomenon which was of supreme importance for the future of painting: the scholars, who were officials by calling and were henceforth deprived of power, found a refuge in the exercise of artistic and literary pursuits. Men of the paintbrush, these poets, calligraphers and painters found solidarity in a common technique. At the heart of the new movement was Hsie Ho, whose Six Rules, drawn up during the sixth century, provided the substance of the basic principles. The first of these rules, and the most important, laid down the necessity for bringing out the Vital Rhythm or Spirit Resonance (*ch'i-yun*). Hsie Ho had the portraitists in mind when writing, but his formula, based on the traditional principles of the Universal Order, the Way of Tao and the Harmony of Li, was applied both to restoring the expression to a face and to interpreting the grandeur of a landscape, the vitality of animals, the blossoming of flowers and the effect of a plumage. The painters of the Court did not fail to make use of the prescriptions of Hsie Ho and pursued the concern for resemblance as far as looking for significant details. Portraitists and animal painters rivalled one another in verisimilitude. The former vaunted the merits of Yen Li-pen (630–73) and the latter the consummate art of Han Kan (720–60). The T'ang artist attempted to catch, through scenes the purpose of which was edification, the expression of a moment—a walk, for example, an everyday activity—of which Buddhism emphasized the fugitive character. This is what was achieved by Chang-Hsuan, Chou Fang (*fl.* 780–810) and Chou Wen Chu (tenth century), whereas the Sung dynasty painters sought the dramatic touch and preferred to illustrate a message, an argument, a solitary journey or a rejoicing crowd. The artists of the Six Dynasties had imparted a much reduced natural setting to the portraits

and edifying scenes of men and animals; but the taste of the epoch for nature and travelling resulted in the birth of the landscape. In the eighth century landscape was no longer a primitive decoration made up of disparate elements; it became the reminder of an environment, its finished forms were harmoniously distributed, while a clearly defined contour encircled the flat tints where greens and blues dominated. This was the classical school—that of Li Ssahsun (651–716) and his successors and disciples. Another painter—the poet and musician Wang Wei (699–759)—intellectualized painting and preached the symbolism of representations. He did not hesitate to correct Nature: according to him, Man and Reason transcended it, for ideas alone were supreme. To the transposition of reality he added liberty of execution, and replaced colours by cunningly graded monochromes. This art of a scholar concerned with idealism was opposed to that of professional painters faithful to resemblance of form and spirit. A third attitude was adopted by independents—worthy disciples of the old sages or ‘madmen’ of the Six Dynasties—who worked without any constraint and gave free play to graphic possibilities, going as far as painting with the finger nail or the tongue and executing, as tachists and pointillists, the sort of extraordinary work (*I-p'in*) painted by the renowned Wanh Mo (fl. 800).

In the tenth century, landscape painters such as Ching Hao (fl. 900–60) tried to provide the spectator with the emotions aroused by the contemplation of nature. Some of them, such as Li Ch'eng (fl. 940–67) and Fan K'uan (fl. 990–1030) placed the accent on the monumentality of landscapes, the structure of mountains and the nature of the soil. Others, such as Tong Yuan (907–60) remained faithful to the spirit of stylization of the monochrome painters by insisting on the poetic atmosphere of nature. The latter—the ‘idealists’—are grouped together under the title ‘School of the South’, whereas the former—the ‘realists’—are known as the ‘School of the North’. Henceforward these two styles were to dominate the entire evolution of Chinese landscape painting.

Under the northern Sung dynasty a new phenomenon occurred—the intrusion of the literati. To be sure, the latter had been painting for a long time, but their point of view—the one defended by Wang Wei—was becoming clearer. Su Shih (1036–1101) proclaimed that ‘anybody who speaks of likenesses in painting should be sent back to the kindergarten’ for, as far as he was concerned, painting was above all the expression by appropriate means of the artist's state of mind. His attitude immediately affected that of the realist painters, and Kuo Hsi (1020–90) insisted on rendering the dynamism which reflects the world in movement while at the same time maintaining an intimacy which added a lyrical note to the representation of Man and nature. The same lyricism, and even a little tenderness, appears in the tradition of which the emperor Houei-tsung (1083–1135), himself a talented painter, made himself the champion in his Academy of Paintings. This solicitude for nature made the genre ‘Flowers and Animals’ fashionable.

A third aspect was brought out by Li T'ang (*fl.* 1100–30), who shared with the literati the feeling that the personality of the artist should appear in his work—an idea which inspired the last great exponents of the classical tradition: Hsia Kuei (*fl.* 1200), Ma Yuan (*fl.* 1190–1224) and Ma Lin (*fl.* 1250). The qualities of academic drawing remained preponderant, but the impersonal severity of the northern Sung dynasty was replaced by the lyricism of Li T'ang. Henceforth this school (known as that of Ma Hsia after one of its founders) constituted the model for the professionals.

For their part, the literati painters departed from the traditionalists and took their inspiration from the Independents (I-p'in). Thus it was that the pointillist work of Mi Fei (1051–1107) and that of monks such as Mu ch'i (*fl.* 1176–1239) and Liang K'ai (*fl.* 1200), who expressed with a spontaneous treatment borrowed from calligraphy the emotions appropriate to adepts of the Ch'an, saw the light of day. With the Yuans the tastes of the literati triumphed; the painters, in exile or retirement, placed the emphasis on the individual, thus foreshadowing the saying ‘Le style, c'est l'homme’. Chao Meng-fu (1254–1322), who was in the service of the Mongols and wished to ignore the conquered Sung dynasty, linked up with the tradition of the Five Dynasties, particularly with Tung Yuan; his art was solid, but still impregnated with conservatism. But it was to the ‘Four Great Masters’ that the task of determining for ever the fundamental qualities of the painting of the literati (*Wen-jen-hua*) was to fall. Alongside Huang Kung-wang (1269–1354), Wu Chen (1280–1354) and Wang Meng (1310–85), Ni Tsan (1301–74), whose works, impregnated with a refined dilettante quality, recalled the beauty of a scene or the quietude of an afternoon's fishing, played the part of a prophet, and his landscapes, reflecting the glacial purity of his soul, remain to this day the ultimate reference of the literati. And yet, the painting of the literati, in spite of its incontestable vitality, did not totally eclipse the traditional painting which had retained from Sung humanism a pronounced taste for everyday life, as is shown by Chao Po-chu (1127–62) and Li Sung (*fl.* 1190–1230). The minor painters devoted themselves to touching illustrations of truth. This was the case with Chang Tzu-tuan who, in the Ch'ing Spring Festival roll attributed to him, depicted the teeming life of K'ai-feng, with its palaces and street stalls, its work and leisure—a work which inspired the Japanese painters who preceded Yamato-e.

Chinese painting exerted a considerable influence in Japan, and the first Japanese works, such as the portrait of Prince Shōtoku, bear the description ‘Chinese type paintings’ (*Kara-e*).

It was from the time of the Heians, and particularly after the sealing off of Japan in 894, that a specifically Japanese painting appeared (*yamato-e*). The oldest examples, the subjects of which recall Chinese descriptive painting, deal with the four seasons (*Shiki-e*), famous scenes (*meisho-e*), the work of the month (*tsukinami-e*) and tales or biographies (*monogatari-e*); they date from the ninth and tenth centuries and reflect the intimacy of certain Chinese rolls,

although the treatment is not so cold and is characterized by great gentleness of atmosphere. Very rapidly, *yamato-e* invaded the screens and sliding doors which were so much in use under the Fujiwaras. The best example of a roll (*emakimono*) is the Tale of Genji: the scenes picked out in colours (*tsukuri-e*) appear in buildings with the roofs removed (*fukinuke yatdi*); the faces are merely suggested: a line for the left eye, an accentuated comma for the right eye and the nose; there is an air of serenity which is appropriate to this genre. The narrative function of the rolls was also illustrated by biographies of priests and histories of certain temples, such as the 'History of Mt Shigi (*Shigisan-enji*)', full of force, clarity and verve. The freeness of drawing is even more evident in the Kosanji 'Caricature of Birds and Beasts'—a satire on Buddhistic life attributed to Toba Sojo (1053–1140).

With the military chiefs of the Kamakura epoch, the elegance of the Heians yielded to realism; serenity and elegance were succeeded by dynamism and violence. This change was chiefly visible in the edifying pictures (*zoshi*) and the portraits (*nisi-e*). In the latter, composition played an important part; it was treated with rare moderation and force: as for example in the portrait of Minamoto Yoritomo. Across the edifying pictures march the crowds of divinities and monsters shown in the 'Handbook on Illness (*Yamai no zoshi*)', the 'Handbook on hungry ghosts (*Gaki-zoshi*)' and the 'Handbook on Hells (*Jigoku zoshi*)'. Other paintings bring us an echo of great deeds and great battles: such are the 'Illustrated Accounts of the Fujiwaras (*Eiga monogatari*)' or 'Story of the battle of Heiji (*Heiji monogatari*)'. Here the atmosphere is aerated and the point of view more remote, so that the field of vision is wider than formerly; to the small lines denoting the eyes are added pupils, and the scenes, such as that of the story of *Tomo no Dainagon* reveal qualities of speed and movement which affirm that Japanese painting has taken on a new direction.

E. Pottery

The pictorial success achieved by the Japanese had no counterpart in the field of pottery, as was the case in China, where pottery constituted a worthy fellow of the graphic arts, with the simplicity of the rustic pottery of the Six Dynasties being succeeded by the vigour of the brightly coloured production under the T'ang dynasty, which in turn was replaced by the refinement of Sung porcelain with its delicately shaded colouring.

The Six Dynasties continued Han production, but as an innovation produced light-greyish proto-celadons with a light-green or greyish-green crackled glaze; these were simple, almost spontaneous works of art in the image of the refuge sought by the anxious spirits of the epoch.

With the T'ang dynasty a new era began, characterized by daring, vigorous shapes, with a new taste for colour and technical improvements which resulted in the production of porcelain. Pottery with a lead glaze continued the Han

tradition. Its shapes, once it was liberated from bronze, were of a wide variety. New types appeared, such as pilgrims' gourds and the Sassanian amphoras with handles in the shape of a bird's neck and head. Yellow, green and blue glazes were superimposed on a white coating, sometimes in monochrome and sometimes in combinations of two or three colours (*san ts'ai*). In some cases the glaze was divided into sections by deep incisions which prevented the mixtures and running of colours, which is typical of other vases. The Sassanian influence is still visible in the reliefs, moulded or stamped with palm-leaf medallions and strings of pearls. The chief innovation of this epoch was the appearance of a white porcelain with a feldspar glaze. The glaze of these first porcelains (*Ring yao*), which at first was plain and cold in tone, became more translucent, of a pure, brilliant white often imitating silverware.

The sober refinement of Sung pottery contrasted with the bursting vitality of T'ang and the decorative richness of Ming. Technical progress then made it possible to obtain porcelain in the place of porcellaneous earth; glazes became thicker and stronger, smooth and rich to the touch. Improved checks on colouring oxides made it possible to obtain graded colours. Shapes were simple and balanced, and curves were unbroken. The beauty of the object were its purity of line and the profoundness of the colours. The decoration was delicately and discreetly incised and sometimes moulded into a slight relief. The new process of painted decoration remained fairly exceptional and only occurred in Tsu-cheu production, where there is a vigorous motif of flowers and foliage painted in black on the white coating, or occasionally in white on a dark coating. This kind of pottery gave rise in Thanh-hoa (now North Vietnam) to local productions the artistic qualities of which made up for the rusticity of the shapes and the fragility of the glaze.

With the appearance of green and red enamels at the end of the Sung dynasty, there began the polychrome production which had such tremendous success under the Ming and Ts'ing dynasties. Under the Sung dynasty, then, monochrome pottery remained in favour. These masterpieces of the potter's art, the astonishing series of which are known by the name of the prefectures, where the workshops were situated and whose reputation they made: *ting* with ivory or cream glazes; *jou* with its finely crackled lavender-blue or pale-green glaze; *kiun* with its opalescent glazes over lavender sprinkled with red spots; and *kien* conical tea bowls with their thick glazes giving metallic reflections, so highly appreciated by the Japanese (*temmoku*), the coatings of which are called 'hare fur', 'partridge feathers' or 'crows' wings'. Lastly there are the celadons—their very name is a colour—following on the *yue* vases of the tenth century, which brought renown to the Lung-ch'uan furnace, the abundant production of which invaded the ports of the Near East and the markets of Europe.

Korean pottery appeared in the fourth century at Silla in the form of grey stoneware derived from the old brown pottery under the influence of the Han potters. Until the sixth century stoneware remained grey, hard and fired at a

high temperature. Chinese shapes were adapted or indigenous shapes taken from the old barbarian repertoires. With the unification of the country, Buddhism predominated and gave rise to abundant funereal pottery for containing the ashes of the dead. Motifs changed; they were no longer incised but stamped; yellowish and olive-tinted glazes betrayed the influence of the T'ang dynasty.

It was with the Koryo dynasty (918–1392) that the Koreans became great potters. Production initially was still inspired by the Sung craftsmen, particularly those of the Chekiang celadons. But by the twelfth century Hsu Ching, the messenger from the emperor Houei-tsung, felt compelled to admire the Korean celadons. The incised decoration and the shapes were still those of the Chinese *Yue* and *Ting*, but the fine kingfisher colour (*koryo pi-saek*) of the glaze was purely Korean. In the middle of the twelfth century there appeared all the known Chinese types, but in addition there were K'i-tan and Liao shapes, which were crowned by veritable technical achievements, such as the imitation of perfume burners in bronze and open-work brush holders. The Koreans claim it was they who invented inlaid celadon (*sanggam*). The decoration was incised and covered with white slip; this was then wiped off and remained only in the incisions; the whole was then covered with a celadon glaze. This process was used in China in the tenth century for moulded motifs and for highlighting inscriptions, but it was the Koreans who used it for decorative purposes.

In the thirteenth century the Korean potters, who were by then masters of their technique, yielded to the temptations of virtuosity. Nevertheless, they were undoubtedly responsible for adding a few touches of copper red to an inlaid decoration in black and white. The Mongol invasion of 1231 hastened the decline of the Koryo celadons without diminishing the vitality of the potters; in the fourteenth century there appeared restrained products with a free decoration, foreshadowing the qualities of Yi pottery (1392–1910).

Whereas Korea, as China's neighbour, was able to benefit immediately from Sung creations in order to produce the famous Koryo celadons, Japan had to wait until the fourteenth and fifteenth centuries before having a pottery worthy of the name.

The first products, made of grey clay and based on south Korean Paikche and Silla models, bear the name of the corporation which made them; they are known as *Suetsukuribe*. It was not until the eighth century that Japanese potters became aware of the possibilities offered to them by T'ang pottery. The majority of production up till then had been of *Sueki*, but the Shōsōin—the treasury of the emperor Shōmu (724–48) still contains fifty-eight examples of pottery with lead glazing in the three-colour T'ang style (*san-ts'ai*); opinion is divided as to whether they are of Chinese or Japanese origin. On the other hand, it is more certain that the contemporary tiles, varnished and coloured green, were made locally as from the ninth century at the latest.

At the end of the twelfth century, the increasing success of the Zen sect

accentuated the taste for Sung art, and the magnificent Chinese pottery of the period was greatly admired, particularly the celadons so much appreciated by the Kamakura lords (1192–1388). The first purely Japanese pottery was probably set up at Seto in 1229 under the direction of Toshiro, who had returned from China. But it was more probably thanks to the Korean Koryo potters that the Japanese learnt to make pottery with decorative motifs taken from nature engraved under a yellowish or greenish coating. However, it was only with the introduction of the ceremony of tea (*Cha no yu*) in the fifteenth century that typically Japanese pottery was to come into being.

F. Music

Music has always been a part of ceremonial life in the Far East. Its origins and its evolution up to the time of the Mongols are either identified with the destinies of the religious and imperial festivals, during which the priests and sorcerers executed ritual dances, or are intermingled with the evolution of the ballads sung by minstrels and peasants.

Under the Six Dynasties, the multiplicity of barbarian courts was the cause of the introduction of many foreign themes; thus, we can distinguish in the repertoires fifty-three lyrics (*pei-ko*) from Hsi-liang (*Kansu*) of hsien-pi origin; under the Suis the Imperial Music Department, which was used as a model by the Korean and Japanese sovereigns, organized ten troupes which played (1) banquet music, (2) pure music, and the regional musics of (3) Tun-huang, (4) India, (5) Korea, (6) Kucha, (7) Bukhara, (8) Kashgar, (9) Turfan, and (10) Samarkand respectively. The foreign influence became more marked in the eighth century; the fashionable song sung by the famous favourite Yang Kui-fei—the ‘Song of the Rainbow Petticoat and Feather Garment’—came from central Asia. This infatuation led Hsuan-tsung to found, in 714, a School of Foreign Music (*chiao-fang*, or teaching shop) alongside the traditional Music Department. This school consisted of two sections—the right-hand section for singers and the left-hand section for dancers. Three hundred of the best artists in the Empire worked in this way under the auspices of the sovereign in the ‘Pear Garden’, where the sing-song girls, whose art foreshadowed the coming of the drama, were also trained by the hundred. As a result of the imperial patronage bestowed upon these artists the ‘pear-garden’ subsequently became the emblem of the theatre. Under the Sung dynasty, there was some attempt to return to sources; the emperor Jen-tsung devoted himself to a revival of folk lore traditions. K’ung San-ch’uan replaced the old single-key modulations (*chu kung t’iao*) by melodies with frequent changes of key (*t’iao* or *kang t’iu*), as for example the famous ‘Western Chamber in Spring’ (*Tsien so hsi hsiang*)’

In Korea, the Kokuryo musicians maintained ‘barbarian’ traditions similar to those of the West and succeeded in evolving a specifically Korean music, which incidentally was much appreciated in China at this epoch of the Three

Kingdoms. Dancing also was in great favour and enjoyed an official status distinct from that of musicians and the accompanists. In addition to Confucian dances influenced by China (*il-mu*), there were dances executed as in China though to some extent contaminated by local traditions, to enhance the prestige of the Buddhistic ceremonies, such as the 'Dance of the Butterflies (*Na.bi.chum*)', which was also very well known in Japan. After the establishment of a Music Department (*Eum.seong seo*) in the unified kingdom of Silla, music in the eleventh and twelfth centuries was divided into three groups: (1) elegant Chinese music (*s.ag*) introduced in 1144 for ceremonies, (2) the Chinese music of the T'ang dynasty (*dang-ag*) and (3) national music (*hyang-ag*). Thus it is that we perceive in the Korean traditional festivals the atmosphere of the Great Centuries of the Chinese world with its music and court dances, as for example the *cheu-yong*, in which five richly ornamented dancers in blue, white, red, black and yellow symbolize the four orients and the centre of the universe respectively.

In Japan, the music and dances of the Middle Ages also illustrate the ascendancy of Chinese art but often with traces of Korean influence. The Department of Noble Music, set up in the seventh century and reorganized in 809, taught and distributed the music of the T'ang dynasty, those of Kokurye, Paikche and Silla, and those of the Champa; the latter undoubtedly came from Fu-nan and was confused with Indian music. It was at this period that the Japanese adopted the Chinese music of the T'angs and its untempered scale of twelve degrees. The melodic scale was of five tones, or seven tones if two sharps or flats were introduced. These five tones could be considered on the same footing as our tonic, second, third (or fourth), fifth and sixth. Out of the sixty possible modes, the Japanese used only six grouped three by three into modes of the second (*ryo*) and modes of the sixth (*ritsu*), the subjective features of which recall the differentiation between the minor and major. For sung music the vocal techniques were superimposed on the melodic line, sometimes with a straight continuous voice (*sugu*), sometimes legato or portando (*suteru*), sometimes staccato (*modori*) or tremolo (*yuri*). The traditions of psalmody (*bombai*) laid down by the Chinese provided a further shading of interpretations. Notation expressed the degrees of the scale by means of abbreviations and vocal forms by means of graphic signs—an upward stroke for a rise of the voice and a wavy line for a tremolo. As in Korea, dancing, while retaining the ritual movements of primitive Shintoism (*kagura*) also adopted Chinese traditions. In the sixth century, there appeared from Korea the *bugaku*, which included dances of Korean-Manchu inspiration (*uho* and *umai*) on the one hand and Sino-Indian inspiration (*saho* or *samai*) on the other, dancers of the former being dressed in green and those of the latter in red. At the end of the tenth century, as a result of a taste for folk-lore which had become widespread in Asia, the *dengaku*—an old rite of prayers for rice—became very popular; later, during the twelfth and thirteenth centuries, the *ennen*—dances based on the *bugaku*—opened up the way to the *Noh*. This transformation of musical

and choreographic manifestations foreshadowed, throughout Asia, the coming of the theatre, and soon the musicians began giving ground somewhat before the writers.

2. THE INDIAN WORLD

The art of ancient India, as we know it, is mainly—almost exclusively—religious, because secular works, to which frequent references are made in literature, have not survived up to our own day. In the fifth century, under the Gupta dynasty, the three religions of India were in keen rivalry with one another. Architecture, sculpture and painting at that time attained a degree of technical skill which, combined with aesthetic sensitivity, gave the works produced at that period a harmony, a balance and a profundity which placed them on the same level as the refinements of literature and the elevation of contemporary thought.

This Indian art spread throughout the Far East and central Asia, and its influence on Chinese art is well known. But in the course of this spreading, the spirit and mood of the works changed; the arts of Cambodia and Java were new offshoots, in which Indian forms of expression were profoundly modified by the vigour of the native temperaments, and were interpreted, adapted, and sometimes enriched.

The art treasures of India were concentrated in a certain number of religious centres; the artistic geography of India coincided in part with its religious geography. The holy places of Hinduism in the Middle Ages began to rival the major centres of Buddhism, and this competition reveals an aspect of the opposition between the two religions which was perhaps not exclusively artistic, but also economic, the aim being to attract crowds of pilgrims through the prestige which monuments and buildings could confer on religious sites. The holy places were consequently extremely rich, and this was the cause of the irremediable loss of a great number of works of art; cupidity and a taste for luxury, besides religious fanaticism, were attributes to Moslems, whose pillaging expeditions caused the destruction of works which travellers had previously admired at Mathurā, Kanauj and Banāras.

The architectural programme also obeyed considerations of a political nature. For instance, the holy city of Māvalipuram (Māmallapuram) was founded by the Pallava Mahāmalla. The rivalry between the Pallava and Chālukya rulers was reflected on the architectural level; the existence of two Kailāsanātha, one at Ellorā and the other at Kāñchi, reflects this spirit of emulation. The Chālukya leaders, who gave their name to a school of art, chose the holy place of Bādāmi for their first capital, and subsequently when they settled at Paṭṭadakal they continued to found temples in the holy city of Aihole. When we remember the religious conflicts with which India was torn at that time, and the part the rulers played in them, we realize the importance which the kings, protectors of religion, placed on religious edifices.

Such buildings, as numerous inscriptions confirm, were erected only thanks to the generosity of the rulers and of a few leading personalities. Religious edifices were not the expression of popular fervour or the result of communal work. Artists, like writers, were protected by the rulers, for whom patronage of the arts was a tradition. But very few proper names have been preserved, for the plastic arts are much less individual than literature. A number of inscriptions reveal interesting details on the condition and way of life of artists, for example the fate which was reserved for the architects of Kāñchi who were taken to Paṭṭadakal as war booty and forced to work for their new masters, though they were treated honourably.

A. Rupestrian Sculpture and Architecture in India

The two architectural techniques previously employed were still practised at the beginning of the Middle Ages, but the older of them, the excavation of shrines in rocky cliffs, gradually disappeared and gave way to the second, the construction of temples in brick or stone. The Buddhist site of Ajantā, where Gupta art had produced some of its purest masterpieces, was located in the territory of the Chālukyas, who were succeeded by the Rāshtrakūṭas. In the same region, first of all at Aurangābād, and also some 200 miles further south in the Kannada country, at Bādāmi, and subsequently particularly at Ellorā, some of the most important buildings of the medieval period were excavated.

Western Deccan

The site of Ellorā provides an example of a phenomenon which is frequently observable in India: the sanctity of a spot did not depend on its link with this or that religion. Buddhist, Hindu and later Jaïn shrines were excavated at Ellorā side by side, and of course the style of contemporary buildings was independent of religion.

As early as the sixth century, at Aurangābād, Bādāmi (inscription dating from 578), in the earliest caves of Ellorā or in the shrines of Elephantā island, near Bombay, architecture became more imposing, though less elegant than at Ajantā. Columns became heavier, capitals became enormous, while the base rose so high that the shafts of the columns disappeared. Later, in the Jaïn caves of Ellorā, after 800, the column was further overloaded with a vase from which ornamentation in the form of plants and garlands emerged. In a manifest desire for grandeur, caves of two and even three storeys were designed. The best of them was unquestionably the Buddhist shrine (*chaitya*) nowadays called Viśvakarman.

In sculpture, this new taste for grandeur and dynamism produced quite remarkable works. The magnificent Śiva with three faces at Elephantā, an image of the multiplicity of aspects included in the divine unity, possesses a majestic power. (Pl. 17.) The Śiva dances of this early period, a plastic vision of the creative process presented as a superlatively free game, combined a

contained lightness and mastery in a perfect equilibrium. At Elephantā the movement grew more impassioned, and was still more violent at the Kailāsa of Ellora in the eighth century.

One of the most beautiful caves of Ellora is the one called the Avatārs (c. mid-seventh century). The most justly celebrated relief in this shrine depicts Vishṇu as a lion-man throwing himself upon the impious one who had dared to defy him; the wretch is about to be torn to pieces, and the artist captured the very instant when terror succeeds provocation.

Somewhat later, under the reign of Rāshtrakūṭa Krishṇarāja Ist, who ruled from 758 to 772, the most extraordinary of all the monuments of Ellora was not only hewn out of the rock, but carved externally and completely detached from the cliff face. This was the Kailāsanātha, destined to rival the temple of Kāñchī, which was also dedicated to Śiva, master of the Kailāsa. (Pl. 37a.) From this time onwards, shrines were no longer excavated in the mountains; they had themselves become mountains in the image of Mount Kailāsa, in the Himālayas, or in the image of the cosmic mountain which was the axis of the world, Mount Meru. This symbolism, which clearly emerges from various texts and inscriptions, was to remain that of Indian temples.

Māvalipuram (Māmallapuram)

The earliest monolithic temples were approximately contemporary with the cave of the Avatārs, but they were much smaller in size than the temple of the Kailāsa at Ellora. The Rātha of Māvalipuram, so called because of their resemblance to processional chariots, were carved in irregular blocks strewn around the beach out of which the architect produced works of art. The site was chosen by Narasimhavarman, also called Mahāmalla. These shrines, small and quite charming, were of various types, depending partly on the shape of the blocks from which they were made. One of them was built on the apsidal plan, which was becoming increasingly rare; others had cradled vaults. Others again, in particular the shrine of Dharmarājaratha, were rectangular in shape and topped by superposed courses like a stepped pyramid, each course bearing miniature edifices. This was the type of superstructure adopted by the builder of the Kailāsanātha at Ellora.

The architectural ensemble of Māvalipuram was complemented by sculptures depicting groups of animals, and by an enormous rock whose summit was concave and in the rainy season collected water which ran down a channel from top to bottom. The entire rock was covered with a great number of sculptures in hierarchical order grouped around the channel, which was probably intended to represent the Ganges, the celestial river which came down to earth thanks to the benevolence of Śiva. This work combines sobriety with power, and its grandeur and dignity in no way detract from its vocation as a place of meditation. Thanks to the artist's liking for a whole range of familiar fauna, Māvalipuram (Māmallapuram) offers some remarkable specimens of animalist art. (Pl. 37 b.)

B. Constructional Architecture in India

Rupestral architecture ended with these masterpieces. Henceforward interest was concentrated on the construction of Hindu or Jaïn temples, which posed the fundamental problem of roofing. The Indians, who did not build arches incorporating keystones (except at Pāhārpur), could only roof narrow spans cantilever-wise, using superposed horizontal courses each of which overlapped the one below it. This procedure moreover demanded a considerable development of the so-called 'peak' roof (*sikhara*), which for symbolic rather than technical reasons became the most characteristic feature of Indian temples, distinguishing different style one from another.

In the so-called 'urban' style (*nagara*) the most characteristic feature was the *cella* surmounted by a shell-shaped superstructure. This type of *sikhara*, crowned by an ornament in the form of an emblematic myrobalam fruit (*āmalaka*), was moreover not confined to India. Indeed, its development can be best studied in the religious capitals of the Kannada region. The temple of Durgā at Aihole (c. mid-seventh century), which moreover retained the basilical plan of excavated shrines, is an early example; while previous temples, in particular that of Lad Khan (mid-sixth century?) had flat roofs sometimes surmounted by a square *cella*. Other temples of Aihole, scarcely later than that of Durgā, were also provided with a *sikhara* of the *nagara* type.

The other type of roofing is to be found in certain monolithic temples such as the Dharmarājarathā of Māvalipuram (Māmallapuram) and the Kailāsanātha of Ellora. Like these buildings, the Virūpākṣa and the Mallikārjuna of Paṭṭadakkal, founded in the reign of Vikramāditya II (733 to 746), have a three-stage pyramidal roof.

Subsequently, however, the curvilinear *sikhara* developed mainly in northern India, while the stepped type of roof characterized Tamil monuments and merited its classical name of *drāviḍa*.

One of the most important centres in northern India in the eighth and ninth centuries was Bhuvaneśvar, in Orissa. The oldest temples in this spot are earlier than the Kailāsanātha of Ellora. That of Vetal Deul had a cradle roof, as had the temple of Trivikrama at Ter, the temple of Chezarla or the Ganesharatha of Māvalipuram, and as the Teli-kā-mandir at Gwālior was to have later. The *sikhara* was flanked by a low pavilion (*jagamōhana*) with a pyramidal roof. While the proportions of these early temples were small but harmonious, the *sikhara* of Liṅgārāja, the most typical of tenth-century temples, was about five times higher than the earliest *sikhara*.

Many temples in this style were built in northern India (in particular in Rājputāna) in the following centuries. Space does not allow of outlining a stylistic geography, but several of the finest buildings are to be found in the capital of the Chandella kings, Khadjurāho. The ogive of the *sikhara* is here more slender than at Bhuvaneśvar, and smaller *sikhara* surround the central tower (as at Bhuvaneśvar in Rājarāṇi). Seen in perspective, the high stylobates

are covered with sculptures, most of them depicting couples embracing. Such erotic scenes may seem surprising in religious temples, but they are connected with a complex religious symbolism. The most ambitious of the temples in this style was the solar temple of Konārak (mid-thirteenth century), again at Orissa, not far from Bhuvaneśvar and from the Pūri centre of pilgrimage, Jagannāth. The *śikhara*, which was not completed, should have risen to a height of about 400 feet. The *jagamohana*, which is still intact, depicts the solar chariot with finely carved wheels, reaching a height of 230 feet.

In the south, a parallel development led to quite different results. The Dravidian style, which developed under kings Pallava and Chōla, produced masterpieces in the Tamil country. The square *cella* with a stepped roof incorporating smaller edifices rose gradually in height. At Māvalipuram, the temple of the beach, which stands not far from the *Ratha*, was built under Narasirinhavarman II Rājasirinha. It was this king who introduced constructional architecture in the Tamil country and began the construction of the Kailāsa of Kāñchī, completed in the reign of his son. The end point of this development was the Rājarājēshvara of Tanjore, whose *vimāna*, an impressive but graceless edifice, was more than 200 feet high. (Pl. 38 a.) In the Pāṇḍya era, on the contrary, the *vimāna* tended to be less prominent, but the temple was surrounded by a wall incorporating doors called *gopuram*. These *gopuram* gradually became the most characteristic feature of the temple; we may cite for example the *gopuram* of Chidambaran, built in the first half of the twelfth century, eight storeys high.

The two main types, *Nāgara* and *Drāvida*, included local variants. A multitude of regional styles gave medieval Indian architecture a great variety. The Himalayan area, where building timber was abundant, made considerable use of that material. The stone temples of Kāshmir are of quite unusual appearance on account of their roofs in the form of truncated pyramids one on top of the other, and the combination of triangular and trefoiled patterns in their pediments. The solar temple of Mārtāṇḍa may be cited as an example.

Two provinces in particular produced quite original styles. From the eleventh century onwards, the Jaïns built imposing ensembles at Gujarāt and Kāthiāwār, whose slender *śikhara* rise amid the often mountainous countryside. Cupolas with cantilevered roofs resting on pillars connected by polylobate arcatures are their most characteristic feature (Girnār, Mount Abu, Satrūñjaya, etc.).

In Mysore, the Hoysala rulers founded temples at Belūr and Halēbīd which are notable for their high terraces, the carved friezes, often very lively, ornamenting the stylobate of the temples, and the star-shaped plan of certain shrines, whose roofs (like the *jagamohana* in the *nāgara* style) are in the form of stepped pyramids.

C. The Beginnings of Indo-Moslem Architecture

Moslem architecture began to develop in India in the thirteenth century.

Though it derived from the civilization of Islam, it is worth mentioning here because of its originality, as Mr Mujeeb rightly emphasized in a recent book. Qutb-ud-Din decided to erect a mosque in his capital called the Quwwat-ul-Islam, and a minaret, the Qutb Minar, which was completed by Iltutmish. (Pl. 42 a.) Right from the beginnings of Moslem art in India, the Indian influence is manifest, even if only in the field of decoration, in which decorative foliage alternates with specifically Moslem inscriptions. Among other buildings of this period may be mentioned the mosque built at Ajmer by Qutb-ud-Din and at Ala-i-Darwāza to the order of Ala-ud-Din Khalji. All these works were at a considerable remove from the Persian and Afghan models (*cf.* the fine minaret of Ghiyath-ud-Din). (Pl. 42 b.) However powerful it may have been, the civilization of the invaders could not fail to be strongly influenced by the Indian milieu.

D. Sculpture

Monumental sculpture, especially up to the ninth century, produced works of great beauty which have been referred to along with the buildings which they ornamented. The essential features of these works, as compared with the harmony, sobriety and freshness of Gupta sculpture, lie in the sense of grandeur, vigour and dynamism which confer their full and profound significance on representations of the great cosmic myths. A few examples may be mentioned: the majesty of the Śiva Maheshvara at Elephanta, the fire of the Śiva dances, the sober power—which does not exclude freshness—of the descent of the Ganges, the ascending lightness of the flying genii of Aihole or Kailāsa at Ellora. Subsequently, ornamental sculpture was a feature of very many temples; reference has already been made to it in connection with Khajurāho, the solar temple of Konārak, and the stylobates of the Hoysala temples. These are just a few examples of an abundant production on which, alas, space forbids us to dwell.

In contrast to the richness of Brahmanic sculpture was the sclerosis of Buddhist statuary, which in the Gupta era had produced works of such pure plasticity. Isolated Buddhas were carved against steles. At a later period we find bejewelled Buddhas, in apparent contradiction with orthodoxy. But the most widespread type was the Buddha seated with knees apart; this is found not only in Ceylon, but also in Burma, Cambodia and Java.

Metal statuary was certainly of very early date, but because of the intrinsic value of metal few works from the Gupta era have survived. On the other hand, there still exist numerous copper and bronze statues of the medieval period, varying considerably in size; some of them are gigantic (reference is made to several of them in literature), but most of them smaller. The technique was generally that of casting in wax. Complex alloys incorporated up to eight metals, including precious metals. At the Magadha and in Bengāl, under the Pāla domination, numerous works were produced, representing in particular

the divine entities of late Buddhism. Works from the south were on the contrary of Hindu origin, and production remained abundant and of high quality in the following centuries. Mention should be made of the hypothesis of Nihar Ranjan Ray, who dates the admirable effigies of Śiva dancing as early as the eighth century, while other specialists judge them to be markedly later.

E. Painting

The masterpieces of Indian mural painting date from the beginning of the period with which we are concerned in this volume. True, earlier frescoes exist, including some vestiges in rather poor condition in caves 9 and 10 at Ajañtā, which show that this art form was practised as long ago as the end of the Sāñchi era. But the most representative works (caves 16, 17, 18, 19, followed by 1 and 2 at Ajañtā, the frescoes at Bāgh, Sittanavasal and Bādāmi) belong to the fifth and sixth centuries. Though certain authors attribute them to the Gupta era (this point has already been raised in Volume II), this is merely a very approximate chronological reference point. The technique of all these works is similar to a *fresco* painting with a *secco* retouching. The colours vary from one place to another, as do details of style, which proves the astonishing variety of this art form. The frescoes at Sigiriya in Ceylon (fifth century?) depict celestial nymphs emerging from the clouds, a theme which was repeated much later by the Cola painters of Tanjore. The Tamil frescoes at Sittanasaval belong to Jaïnism; plants figure prominently in them. Those of Bāgh and Ajañtā are of Buddhist inspiration, and illustrate episodes in the previous lives of Buddha, or in his last existence.

Ajañtā is the most interesting site. At first glance, the mural decoration of caves 1 and 2 appears rich but confused; there seems to be no arbitrary separation between the subjects depicted. This is due to a very skilful art of composition, which orders the scenes around a centre and separates them from one another by subtle transitions. Consequently, instead of being invited to look at pictures from the outside, as it were, the spectator finds himself immersed in a harmonious and refined atmosphere, worldly no doubt and delicately sensual, yet still religious; the dominant *rasa*, to use the language of rhetoric (which theoreticians applied to the plastic arts), was undoubtedly the pacified *rasa*.

This worldly elegance may indeed appear surprising on the walls of a monastery. Yet this gaudy depiction of secular life was, in the spirit of contemporary Buddhism, enveloped by plastic transposition in a veil of illusion, and the monks viewed it in a spirit of detachment rather than participation. This profoundly religious inspiration culminated in the admirable figures of Bodhisattva in cave 1. The figures on either side of the entrance to the shrine are doubtless Avalokiteśvara and Maitreya, and they reflect the ideal of the Great Vehicle, perhaps Avalokiteśvara. The expression, the smile, the attitude of the whole body express the peaceful acceptance of the funda-

mental antinomy of the way of the *bodhi*, summed up in the concept of the 'great compassion' (*Mahākaruṇa*) proper to the Bodhisattva, which demands both supreme detachment and supreme love.

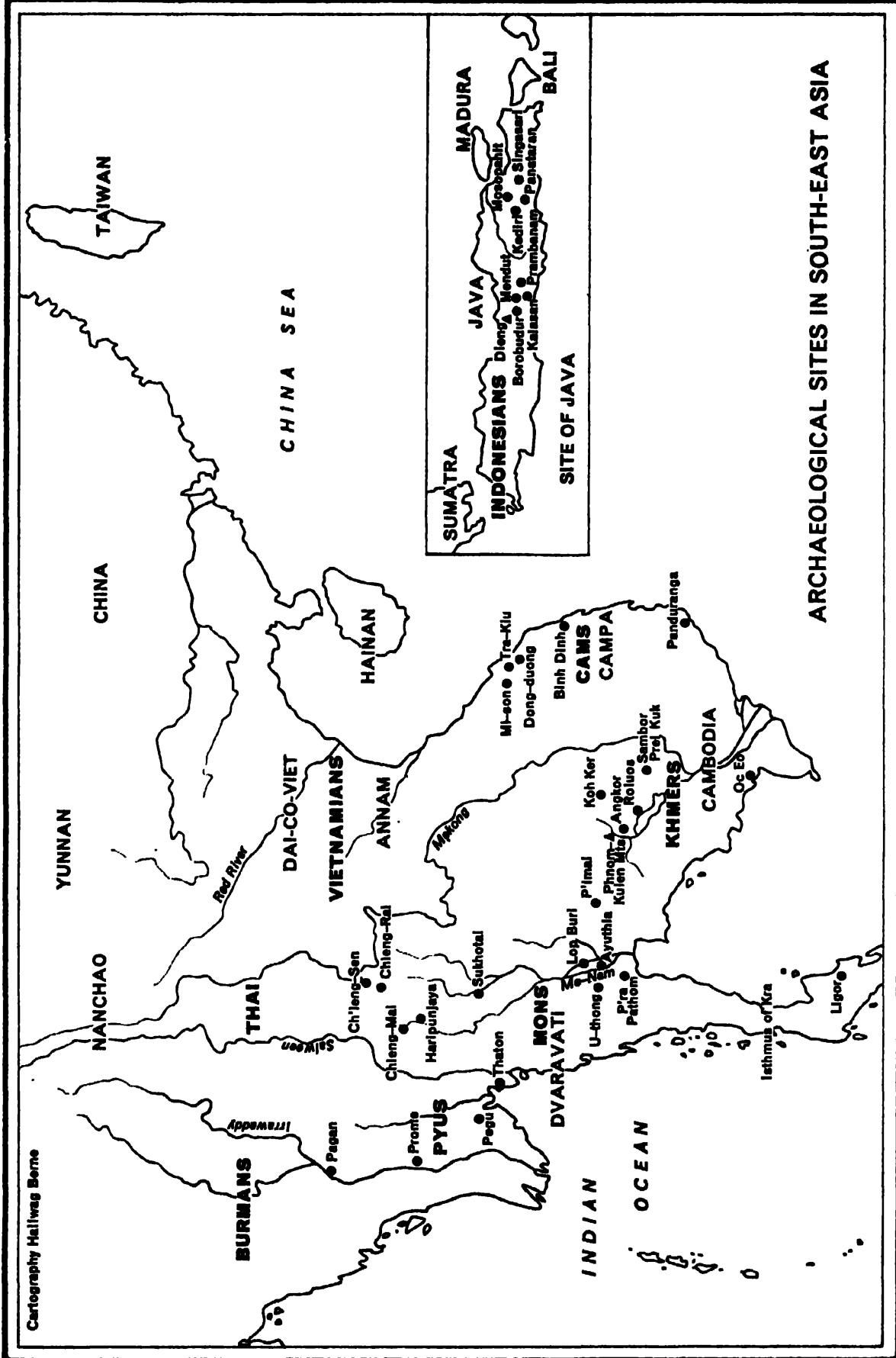
Subsequently, in the Kailāsa at Kāñchī, the Kailāsa at Ellora and the *vimāna* at Tanjore, as well as at Polonnāruva in Ceylon, a decline began.

Alongside this religious art there existed a secular school of painting on palm leaves or fabrics, which enjoyed a vogue to which numerous literary allusions attest. But the earliest of such paintings which have been preserved date back only to the tenth century (some previous specimens are of controversial date). The Magadha and Bengāl school produced numerous Buddhist manuscripts prior to 1200, almost all of which were destroyed at the same time as the universities. The beauty of the very few copies which have survived makes this loss felt all the more keenly. The Nepāl school, which inherited the Magadha traditions, showed no great variety in the illustration of book covers or the painting of banners similar to those in neighbouring Tibet. In Gujarāt, Jaïn manuscripts from the twelfth century onwards dealt with religious subjects in a style which, featuring sharp profiles in which the eyes are depicted as in a front view, recalls later frescoes, in particular those of Ellora. In 1300, paper had not yet apparently come on the scene.

F. Burmese and Mon Art

Before Burma became a unified state, the different ethnic groups inhabiting the basin of the Irawadi were divided into independent states. The earliest of them, referred to in Chinese records in the third century A.D., was a state whose capital, Śrikṣetra, was located not far from the city of Prome on the present site of Moza. It was inhabited by a Tibetan-Burmese people, the Pyus, whose neighbours to the south were the Mons, related to the Khmers; and to the north, the Burmese proper. Excavations carried out on the site of Moza have revealed gold plaques carrying Buddhist inscriptions in the Pāli language, which may date from the fifth century A.D. Even at that time, Burma was thus at least partially under the influence of Theravāda Buddhism. The temples of this city, destroyed by the Mons about A.D. 800, were made of brick and topped with a dome derived from the *sikhara* in the *nagara* style. Some fragments of sculptures are related to the late Gupta style.

Further south, the state of which Pegu was the capital, inhabited by the Mons, shared the same civilization as the state of Dvāravatī, located in the basin of the Menam in what is now Thailand. The main Mons sites in the Menam basin are Nak'on Pathom and Kū-bua, the latter discovered recently. Some fine terracotta figurines have been found there. From the second half of the eighth century onwards, the centre of the Mon civilization in Thailand moved to the north west, where the Kingdom of Haripuñjaya flourished until the thirteenth century. The most interesting monument built in this area was a *stūpa* five storeys high, called the Watukukut, dating from the twelfth century.



Northern Burma remained until the early eleventh century less of a police state than the states of the Pyus and the Mons. The first great Burmese king of Pagan was, as we have seen, Anōratha (1044–77) who occupied the city of Thaton in Pegu, brought in bonzes and artisans, and raised Theravāda Buddhism to the rank of the official religion of Burma. The prosperity enjoyed by Buddhism was such that under his reign he was able, at the request of Vijayabāhu, to assign bonzes to restore Sinaise Buddhist, which had been weakened by the Saivite Chola. On their return to Burma, these bonzes brought back relics which had to be housed in temples, and this was the beginning of the development of Burmese art. The most characteristic feature of the *zedi* (from the Pāli *cetiya*) was a large *stūpa* in the shape of a bell. The Lokānanda was consecrated under the reign of Anōratha, while the Shwezigon was not completed until the reign of Kyanzitha. This type of building survived until the thirteenth century; the latest was built in 1274. Under the reign of Kyanzitha there appeared a new style of temple, inspired apparently by certain Indian Buddhist monasteries, in particular that of Pāhārpur in Bengal. The temple of Anantaprajñā (infinite wisdom) comprised a central mass topped by a slender tapering *sikhara*, surrounded by two concentric corridors and entered through four porticoes.

Other types of Burmese buildings exist. We shall merely mention two temples inspired by that of Bodh Gayā, erected beside the tree under which Buddha experienced his religious conversion. These temples were founded when the Bodhi temple was restored by the Burmese kings.

G. Khmer Art

Recent excavations in the Menam basin in Siam revealed interesting specimens of Fu-nan art, to which are attributed also some rare buildings whose true date is uncertain. Khmer art proper began only in the seventh century; the archeological site of Sambor Prei Kuk, former capital of Īśanavarman Ist, king of the Tchen-la (616 and 627) comprises a number of shrines in the form of brick towers grouped within rectangular walls. The only stone elements in these temples were the lintels and pillars. The elegant decoration, while repeating Indian themes, treated them in a new manner. Thus, right from the beginnings of Khmer art, the beauty of its decorative sculpture was in evidence, and in the course of a development which was to last six centuries, this decorative sculpture was the most precious asset of Khmer architecture.

Statuary, which appeared at the beginnings of Khmer art, produced in particular representations of Vishṇu and of Hari-Hara (a composite figure, half Śiva, half Vishṇu). In its majestic conventionalism it contrasts with the suppleness of the Indian works which inspired it. The Indian emphasis on the hips gradually disappeared, without the loss of the discreet naturalism which tempered the nobility of a lifelike suppleness. The fine Hari-Hara of

Prasat Andêt, which dates from the period following the style of Sambor Prei Kuk, is the most outstanding example of this development. (Pl. 36 b.)

The reign of Jayavarman II marked a turning point in the political and artistic history of Cambodia. The inscription of Sdok-Kak-Thom explains how, in 802, this king was crowned universal sovereign of Phnom Kulêñ, north of the Great Lake. Its capital, the artificial centre of the kingdom, was built around the urban Liñga and royal protector of the Khmer state. Many small temples discovered along the Phnom Kulêñ by Philippe Stern provide evidence that this political renaissance was accompanied by an artistic renaissance. The symbolism of the cosmic mountain, which doubtless also involved Indian political and cosmogonic conceptions and ancient native traditions, had determined the choice of this capital, which in Sanskrit was called the Mount of the Great Indra. But the location proved to be inconvenient, and Jayavarman II founded the city of Hariharâlaya in the vicinity of the Great Lake, in a region where there was a better water supply. The name of Hariharâlaya was deformed in the course of the centuries, and became that of the archeological site of Roluos. The Khmer sovereigns never abandoned this region, except temporarily, until they were chased out of it by the Siamese.

The second successor to Jayavarman II, Indravarman I, founded two important buildings in 879 and 881. The monument at Bakong, perched on a pyramid of modest dimensions, comprised a *cella* designed to house the royal Liñga. His successor, Yaśovardhana, chose for his capital a new site near Roluos and founded a city there around a natural eminence. This city, Yaśodharapura, is the present-day Angkor, and the 'Central Mountain' is Phnom Bakheng. So we see that the Khmer sovereigns and builders hesitated at first in associating the temple with the mountain. Henceforward the temple itself was to become an artificial mountain made of laterite, in the form of a stepped pyramid. The principle is seen in the little temple of Baksei Changkrong erected by order of one of the sons of Yaśovarman I. (Pl. 38, b.) The Prang of Koh Ker, capital of Jayavarman IV (second quarter of the tenth century) had much more audacious proportions. In the reign of Rājendravarman, in the middle of the tenth century, further progress was made; this time five towers surmounted the laterite pyramid, while galleries ran along the edges of the lower terrace (eastern Mebon, Pré Rup).

But about 967 the temple of Banteay Srei was built. Its plan was completely different; around the central shrine were grouped several pavilions (often called 'libraries') which were built on substructures. With the Prah Ko style mural decoration appeared in the form of 'guardians of the gates' and celestial dancing girls called *apsaras*. The *apsaras* of Banteay Srei are among the most charming in Khmer art, though the juvenile grace of the guardians is hardly appropriate to their presumed function. The pediments of this temple are decorated with scenes in relief, carved in pink sandstone, whose composition is tranquil and well-ordered.

However, the mountain-temple, which thanks to its galleries could be

larger in size, continued to develop. About the year 1000, the gallery at Ta keo ran completely around the temple, but the architects did not go so far as to give it a stone roof; this was not done until the construction of the impressive Ba Phuon, due to the successor to Sūryavarman I, who was too busy with his military undertakings to be a great builder.

Khmer architecture was on the way to its apotheosis. The lay-out became more complicated, while still remaining logical; on the steps of a pyramid were built five staggered shell-shaped towers surrounded by galleries, the latter connected by cruciform cloisters. Around this edifice the architect laid out avenues to form a setting for it. The whole was surrounded by moats crossed by bridges whose ramps were cambered in the shape of serpents' hoods. Such was Angkor Vat, whose well-balanced majesty is apparent not only horizontally, but also—as befits a mountain-temple—vertically. It was at Angkor Vat that the Khmer art of bas-relief reached its apogee. The dancing girls, until then isolated, were depicted in groups, bare breasted, sumptuously bejewelled, in coquettish or nonchalant attitudes. In the galleries, the artists had about 130,000 square feet of space to decorate. The low bas-relief, which emphasized the architectural perspectives instead of breaking them up, was arranged in eight compositions only, two of them 321 feet long: the parade of the troops of Sūryavarman II and the duel between Vishṇu and the titan Kālanemi. The delicate and imaginative treatment and the precise observation of details were in keeping with the scale of the overall conception. (See illustration relating to transport, in the chapter on technology, Pl. 4c.)

After attaining this peak, Cambodia underwent a serious crisis. The city of Angkor was captured and pillaged by the Chams in 1177. It remained for Jayavarman VII, the great Buddhist ruler who was also the most distinguished builder in Khmer history, to restore the grandeur of Cambodia. Reference has been made to his social foundations. We shall mention here only the most important edifices of his reign, whose chronology has been established by the joint studies of Georges Coedès and Philippe Stern: Banteay Kdei, Ta Prohm, Prah Khan at Angkor, Neak Pon, and in the provinces Banteay Chmar, Vat Nokor, Ta Prohm at Bati and Prah Khan at Kompong Svay. It was he also who gave the capital a rectangular wall with monumental gates at the cardinal points. But the strangest and most extraordinary of all the edifices built during his reign was the Bayon, dominated by fifty towers each carrying four faces representing the Bodhisattva Avalokiteśvara, gazing simultaneously in all directions. This monument, whose symbolism is difficult to elucidate, has been studied by several scholars, in particular Paul Mus and Georges Coedès. It has been supposed, not without reason, that the face dominating Bayon was that of Jayavarman VII, identifying himself with Avalokiteśvara and conscious of the fact that as a true Bodhisattva he was offering his merits for the well-being of his subjects. Thus at the Bayon of Angkor we see the simultaneous culmination of a conception of architecture and a conception of royalty.

The bas-reliefs of the Bayon style, which are valuable for the observation of

Khmer life about 1200, marked an evolution toward the picturesque which went beyond the classicism of Angkor Vat.

In the statuary, the relief of the bodies was neglected, but the faces with eyes closed in interior contemplation, and with the hint of a smile sufficient to re-establish communication with human beings, expressed the immersion in the ultimate essence which was the Buddhist godhead.

H. Cham Art

Champa was Indianized at a very early date, as evidenced by a bronze Buddha of the same type as the Indian Buddhas of Amarāvatī from the site of Dong-düöng; about 280 the Chinese government of the Red River basin was already complaining of the turbulence of its Indianized neighbour to the south, then called Lin-yi. But the earliest evidence of Cham art dates from the seventh century. On the site of Mi-sön a substructure was found, doubtless intended to support an edifice made of lightweight material, decorated with an extremely fine sculpture whose naturalism is tempered with a light idealization. It was in the ninth century, in the Dong-düöng style, that Cham art, freed of the Indian influence, assumed its most markedly original aspect. We may cite as an interesting example a Buddha of the barbarian type, with arched eyebrows in relief and thick lips.

The pedestal of Tra-kieu, in the tenth century, was perhaps the finest example of the following style, in which art had become more refined without losing its vitality. The dancing girls decorating this pedestal, with their almond eyes and extreme suppleness, their indifferent far-off expression, have an enigmatic charm. Subsequently, sculpture lost this nonchalance and acquired austerity and grandeur (the Siva of Thap-nam) before falling into a decline, while the towers (*kalan*) which often stood on hilltops took on a severe and bare aspect (silver tower, ivory tower, copper tower, gold tower, dating from the twelfth to the thirteenth centuries).

Cham art did not end in 1300; after the extinction of the Cham people it survived in decline for several centuries, as seen in the last *kalan* (Po-klaung-garai, c. 1300, and Po-rome, seventeenth century?) and the old statues standing against these steles and ultimately becoming one with them (*kut*).

I. Javanese Art

Indonesian art is concentrated mainly in Java, more precisely in the central and eastern parts of the island. Examples of comparable importance have not been found in the Malay peninsula and Sumatra.

The oldest shrines in Java were built on the Dieng plateau and in the province of Kedu and the adjacent areas of the provinces of Surakarta and Yogyakarta. The edifices on the Dieng plateau which may be supposed (though there is no proof) to have been built by the Saivite rulers who preceded the Buddhist dynasty of the Sailendra, reveal the characteristics of

Javanese art, apart from the Chandi Bhima whose superstructure is reminiscent of a former type of *sikhara* in Indian temples of the *nagara* type. The most typically Javanese decorative theme is the arc, which frames recesses and doors. This arc, broken at its centre by the head of a monster without a lower jaw, called the head of a *kāla*, terminates in diverging sea monsters with raised trunks called *makara* in Sanskrit. The origin and symbolism of this theme has given rise to numerous hypotheses (links have been suggested with China, Melanesia and pre-Columbian America). However, even if the vogue of the *kāla* and *makara* arc was uniquely Javanese, its constituent elements were purely Indian.

In the second half of the eighth century, the successors of Sañjaya in central Java accepted the sovereignty of the Sailendra Buddhists. One of them had a temple dedicated to Tārā erected in 778; Tārā was the female personification of wisdom. This temple was subsequently remodelled and is now the Chandi Kalasan. The monuments in the southern part of central Java date from about 750 to 900, that is to say the period when the Sailendra protected a Buddhism impregnated with Vajrayana, in close liaison with the Magadian universities. The simplest of these buildings are the small but well-proportioned Chandi Pavon, and the Chandi Mendut, where a sitting Buddha flanked by two Bodhisattva still survives. The Chandi Sari is more or less contemporary, and is bigger and less harmonious; but its walls are decorated with rather dry male and female figures, the latter among the most gracious in the whole of Javanese art.

The Borobudur is a grandiose monument, the most celebrated in Java. (Pl. 39.) It is approximately contemporary with the Chandi Mendut, Sari and Kalasan. Laid out in successive terraces and facing the cardinal points, it is built on a natural eminence. Four successive rectangular terraces incorporate galleries and are surmounted by three circular terraces ornamented with miniature *stūpa*. A bell-shaped *stūpa* tops the whole, which lies within a 360-foot square. Staircases lead from the galleries through *kāla* and *makara* doorways, allowing the monument to be climbed directly, whereas normally pilgrims had to reach the upper terraces through the galleries, which are decorated with some 1,800 bas-reliefs depicting the previous lives of Buddha and his historical life from his birth to the first predication. (Pl. 40.) It is notable that the entry of Buddha into total Nirvāna is not represented at Borobudur. The style of these bas-reliefs, while still reminiscent of Indian classicism and clarity of composition, is already impregnated with naïve vitality which is very characteristic of all the art of central Java. This Javanese simplicity, gravity impregnated with youth, a tranquil sweetness, gives an unexpected charm to the profound piety of Buddhism.

The buildings standing on the plain of Prambanam seem more recent than the Borobudur or Mendut. From this period onwards, several edifices were grouped in a single ensemble (Chandi Ngawen, Chandi Plaosan, Plaosan Kidul). The most important of these monuments is the Chandi Sevu, where

240 chapels dedicated to the divinities of late Buddhism surround the central shrine.

The most impressive complex of Prambanam is, unlike the buildings just referred to, a Hindu temple consisting of eight shrines grouped on a sub-structure which is itself surrounded by a series of walls. The most imposing of them is the Loro Jongrang, which was restored by the *Oudheidkundige dienst*, rising to a height of some 165 feet. A peripheral gallery is decorated with reliefs illustrating scenes from the *Rāmāyana* whose style is more advanced than that of the Borobudur; it is less harmonious and less dignified, but has a new dynamism and a sense of the realities of day-to-day life. (Pl. 41.)

At this period a bronze art of a high degree of perfection developed in Java. This poses a tricky problem of influence. The small religious statuettes are very reminiscent of the Pāla bronzes found in the neighbourhood of Nālandā, and we may wonder whether the bronzes from Magadha were influenced by Javanese bronzes.

It seems more likely that it was from India that the Buddhists on the main island learned the skilful composition of these bronzes, which incorporated up to eight different metals, and the technique of wax casting.

In the second quarter of the tenth century, the Javanese capital was transferred to the eastern part of the island, perhaps following a natural cataclysm. From that time on the Javanese civilization diverged from the Indian pattern more markedly than in the past. At the same period, Bali developed an original culture expressed in Balinese dialect, but throughout history there were many interchanges and close contacts between the two islands. In Java, the Kadiri dynasty, founded by one of the sons of Airalaṅga, lasted until the thirteenth century. It was then that a Śaivite complex was begun on the site of Panataram; it was not completed until the fifteenth century. The reliefs at Panataram illustrate Javanese poems, in particular the Kṛṣṇāyana composed by Triguṇa. Several temples of this period were funerary monuments. The Chandi Kidal, built for a king who died in 1248, was still impregnated with the spirit of central Java, while the Chandi Jago, built twenty years later and decorated with reliefs illustrating Javanese poems, expressed a more vigorous flowering of native talent and a decline of Indian influence.

At the beginning of the thirteenth century a governor of Tumapel broke away from Kadiri and created a new state, known as the Kingdom of Singhasāri. The Chandi (also known as Singhasāri) was erected to the memory of king Krtanagara, a great monarch who was a devotee of Kālacakra Buddhism. He died shortly before the arrival in Java of the fleet which Kubilai sent against him as a reprisal for the ill-treatment inflicted on one of his envoys. It is unquestionably one of the most impressive funerary monuments of its type.

The *kāla* and *makara* arc, so characteristic of central Java, had disappeared at this time in eastern Java. Henceforward only a *kāla* head of terrifying appearance, with short clawed limbs, dominated the high, narrow gates and doorways. The reliefs were flatter and surface contours were neglected. The

figures, depicted in conventional attitudes with their faces in profile but with both eyes showing, are reminiscent of the shadow theatre (*wayang kulit*), and the background is full of details, in particular luxuriant vegetation.

This art form continued to develop in the following period under the Mojopahit dynasty, founded after the raid of the Mongol fleet whose consequences were not long-lasting.

J. The Influence of Indian Art on Central Asia and Tibet

In the Middle Ages life in the oases of central Asia, where an art derived from that of India developed at the same time as Buddhism, was seriously perturbed by political conflicts: the Chinese domination in the seventh century, followed by the occupation of the southern states by the Tibetans from the mid-eighth century to the mid-ninth century, and the settling of the Uyghur Turks in the region of Turfan in the ninth century. In the tenth century, the eastern and southern states were swamped by Moslem Turks, while the Buddhist Uyghurs, in close contact with China, retained their power in the east.

These political vicissitudes had repercussions on the production of works of art. Khotan, on the route to the south, no longer produced any original works after the Tibetan occupation. The coins which have been found in this region are not later than the eighth century. Hsuang-tsang, who visited this area, mentions in particular a wooden tower seven storeys high which he admired. But at that period the influence of Gupta art had already made itself felt in central Asia, perhaps by the difficult but direct route through Tibet and Karakoram. Numerous remains have been found at Dandan Uilik, including shrines, sculptures, paintings and manuscripts dating from the seventh and eighth centuries. The mural paintings, which may date from the eighth and early ninth centuries, are distantly reminiscent of the suppleness of Ajantā, but the Chinese contribution is reflected notably in the long robes worn by the figures painted on wood.

From the ninth century onwards only the northern route remained important; it was here that the Gandharian and Chinese influences had formerly met. The monastic centres of western Tarim declined rapidly from the eighth century onwards because of the Moslem menace, while the eastern part of the basin remained prosperous and kept up close relationships with China until the ninth century, when the decline became general.

Kashgar first suffered the assault of Islam, and the great *stūpa* was destroyed. Tumshuq, though further east, was not spared. But in the region of Kutcha, which had been an important point in the easterly advance of Indian influence, shrines and monasteries have been excavated near Qyzyl and Qumtura; they were decorated with paintings which remain in a better state of preservation than those of buildings constructed above ground. The site of Karashar or Šorčuq is celebrated for the 'thousand caves (Ming-öi)' which were dug there.

Turfan, conquered in the year 640 by the T'ang, was geographically and culturally at the limit of the sphere of influence of the Chinese civilization. In the ninth century the Uyghurs took over the region and set up their capital at Qočo (Chotscho). They first adopted Manichaeism, which in central Asia produced more interesting works than Mazdaism and Nestorianism, before becoming converted to Buddhism. On the site of Astanan tombs have been found containing a great deal of funerary furnishings: painted clay statuettes, paintings on wood and silk, fabrics, and pottery of the T'ang and Sung periods. East of Turfan, at Bezeklik, shrines and monasteries were built and excavated; Buddhist at first, then Manichaean, then Buddhist again until the eleventh century. The walls and ceilings were painted, but as might be expected the frescoes survived in a much less satisfactory state of preservation in buildings constructed above ground than in the excavated monuments.

Every site, every oasis, possessed its special features. Yet there were also technical and aesthetic trends common to all the local schools of central Asia. New architectural forms appeared, like the octagonal *stūpa* (Šorčuq, Qočo). In the eastern regions, after the seventh century, edifices with diminishing storeys appeared; their rôle was the same as that of the *stūpa*. The plans of the shrines and monasteries were more complex than in the preceding period, but in both excavated shrines and shrines built above ground there was a passage enabling the ritual circumambulation to be performed. It was only at Bezeklik and Šorčuq that the religious statue, instead of occupying a niche, was placed on a projecting base, as though the ancient ambulatory rite were henceforward replaced by an immobile contemplation at the foot of the icon.

There were statues in terracotta and wood, but the most widely used material was dry clay, to which were added vegetable or animal fibres. Many small works were cast, while larger statues incorporated cast elements. Despite later retouching intended to vary the type or the expression, this procedure led to great monotony.

Painting was more interesting than sculpture. It is possible to distinguish three periods between the fifth and the eleventh century: the period of Gupta influence, succeeded by a certain decline; then, from the eighth century onwards, the Chinese influence permeated the Central Asiatic style, the long robe replacing the fitted tunic and the edged corselet which for centuries had been so characteristic of the fashion prevailing in the oases of Tarim.

The site of Qyzyl has been the subject of particular study by German scholars. The inspiration here was Buddhist. Alongside numerous images of Buddha and Bodhisattva are found scenes from the life of Buddha, from his previous lives, or from edifying tales (*Avadāna*). The finest style was that in which the Gupta influence was still very obvious. The artists were less subtle and less sensitive than those of Ajañtā, but they nevertheless succeeded in creating an original style. In the seventh century a certain decline appeared, a desire for stylization, leading towards decoration, and a less delicate but more lively and bright range of colours than in the previous period. The paintings

of Qumtura, dating from the eighth century, are characterized by a predilection for rounded forms and supple, wavy lines.

The Šorčuq style was intermediate between the Qyzyl and Turfan styles. It featured curious bearded figures wearing long white robes.

In Turfan, where the T'ang conquest introduced the Chinese mentality and taste, the site of Bezeklik is particularly noteworthy. The Buddhist period, which lasted from the mid-seventh century to the late eighth century, derived from the expansion of T'ang art. In the ninth century, works of Manichaean inspiration were created (especially cave 25, the site of Idikut Shahri and illuminated manuscripts). The priests and the elect are clothed in long white robes and wear mitres on their heads, while the Uyghur donors wear sumptuous costumes. Works which came after the conversion of the Uyghurs to Buddhism are of lesser interest.

K. The Beginnings of Tibetan Art

Tibetan art also came under Indian influence, through two channels: Bengal and Nepal on the one hand, and Kāshmīr on the other hand. The Indian missionaries who evangelized Tibet and the Tibetan monks who came to study in the monasteries of Kāshmīr and Nepal and the great universities of Magadha and Bengal, were the promoters of Tibetan art, which was essentially religious.

Tibet, it will be remembered, was converted in two stages. In the reign of Srong-bcan Sgam-po in the first half of the seventh century the task of indoctrinating the Tibetan people and of making Buddhist writings available to them in their own language was undertaken. One of the first spectacular results of this effort was the erection about the year 775 of the monastery of Samye, which was built to an Indian model. The influence of Pāla art must have been predominant at this period, and was reflected in bronze statuary and religious objects. The frescoes of Da-pak according to Tucci, date from this early period. But at the same time the Tibetan expansion in the direction of central Asia brought the Tibetans in contact with the art of Tarim (manuscripts and painted linen scroll of Touen-houang).

After the persecution of Glang Darma under the kings of western Tibet who reigned at Tho-ling, Tibet maintained particularly close relationships with Kāshmīr. It was apparently a Kāshmīrian who was assigned the task of rebuilding the monastery of Samye, a task to which five hundred artisans contributed, including sculptors, jewellers, etc. The great translator Rin-chen-bzang-po, official adviser to the sovereigns, played an important artistic rôle at Tho-ling and had *stūpa* and monasteries erected.

From this period onwards numerous monasteries were built in southern Tibet, which have been studied in particular by Giuseppe Tucci. Those at I-wang, in which Tucci recognizes the influence of central Asia, and at Samada, probably date from between the eleventh and fourteenth centuries,

while those at Salu and Gyan-tse, in which the different influences merge in an authentic Tibetan style, are probably later (fourteenth to fifteenth centuries). The monastic studios also produced numerous manuscripts and book covers.

So concludes this brief review of the cultural areas on which Indian art exerted a determining influence. The diversity of these art forms, and the originality of each of them in the light of the profound impression made on them by each aesthetic temperament, is quite remarkable, and is to the credit of what has been called Indian colonization. In this sense, no colonization in the history of the world has shown itself to be richer or more fruitful.

3. THE ARAB WORLD

A. Sassanid Art

In all its forms (architecture, rock-sculpture, artifacts) the art of the Sassanids conveys a picture of a society where everything was grandiose and heroic. The large complexes built in the last days of the dynasty, the Kasr-i-Shirin—dedicated to the favourite of king Chosroes II—and the Tak-i-Bustan, are works of great beauty and majesty. The hall-mark of Sassanid architecture is certainly the vault and the dome on squinches. It was indeed there that appeared the chamber known by the Persian name of *iwan*: a sort of large recess without a façade wall, but with a barrel-vaulted roof. It was found, slightly modified, in certain Umayyad castles, and later in the palaces of Samarra.

Rock-sculptures were devoted to the glorification of the regal majesty: they existed from the time of the Sassanid accession. The cave of Tak-i-Bustan shows a boar-hunt with beaters on elephants: the sovereign is bending his bow, while musicians play instruments. The whole is treated with an acute sense of movement and with real power. Elsewhere there is a hunt with hounds the sovereign being shown in pursuit of a deer. The harness and clothes are rich and colourful, the clothes are covered with braid and trimmings. Attention to detail is marked, even to a representation of the weave of the cloth.

The luxury-loving Sassanid dynasty has also left a rich heritage which includes silver-work, coins, cameos, ceramics, and precious silks. (Pl. 43.) The silver dishes, like the rock-sculptures, celebrate the monarch, who appears on them enthroned, or joining in the chase, the courtly sport *par excellence*. Sassanian pottery was apparently influenced by the Chinese. The remarkable thing about the textiles is that all the specimens have been found outside Persia. Their chronology is hard to establish, and there is at present a growing tendency to place certain pieces, which are clearly of Sassanian inspiration, fairly late in the Moslem period. The themes have become almost universally popular, being found from Europe to Japan. There is an overall unifying

pattern of tangential circles, with motifs within these, which, although uniform, are carried out with such freedom of detail as to make them seem subtly varied. Before the tree of life, knights confront each other, surrounded by a fauna of incredible richness. Important personages and animals, eminently dignified, full of stately gravity, are portrayed as if taking part in the rites of some complicated ceremony. Winged animals are very frequently depicted, with the kind of wings peculiar to Sassanian art, where the quills proper show a gradual tapering off in length like a Pan pipe, the longest curving in a whorl. (Pl. 44a.)

B. Moslem Art

The Cultural Background

The term, *Moslem art*, may be taken to cover the totality of artistic manifestations in the countries subject to the law of Islam and governed by Moslem princes. It may be extended also to include the *Mudejar* art of post-Reconquista Spain and that of the Norman princes of Sicily. Within this vast area, each region has its clearly distinguishable individual trends, and national tendencies are to be discerned. Islam dictated the plan of religious building, but the monarchies created its language. The mosque, for instance, was not only a building for religious purposes, a temple for the saying of the ritual prayers; it also had an aulic function, in that, in his capital at least, the prince used it for the affirmation of his power. In many cases he would have been among those instrumental in its foundation, and he saw to it that, every Friday, his people paid homage to his sovereignty there.

Political events played their part. Certain items particularly are of importance: the introduction, for instance, at the instigation of the Seljukids, of the religious college, the *madrassa*, or the sharp psychological effect which Spain had on the Berbers who undertook its defence against the Christians. And a last factor to be taken into account is the possible migration of artists. They may well have been attracted by high payment, or the desire for their services and the prestige of a sovereign, a case in point being the Hafsidis, who surrounded themselves with Andalusians.

The Arab conquest brought with it a religious creed and a way of life, but the interests of the first statesmen lay simply in government. The rest was secondary, and the Caliphate prefects made no attempt to change national languages or systems of administration. In Egypt, as there are numerous papyri to testify, all the administrative officials for the first hundred years were Christian. Conversion, moreover, was not something to which great energy was devoted, as is proved by the fact that the first edifices raised for the purposes of Moslem worship were found, when they came to be used, to be too exiguous, even in Arabia. While there were still numerous fire-temples in Persia, many areas still did not possess a mosque as late as the middle of the tenth century.

Simple as the constructions probably were that the Moslems erected in the urban centres, they give evidence of an understanding of planning and a use of materials at a marked remove from the encampment tent. The caliphs and their prefects, of course, set local craftsmen to work, and must have enlisted the advice of autochthonous administrators, whom they had wisely retained. But this prudence, the abstention from revolutionary procedures, and the system used in the organization of the work, are invaluable indications of an overall authority governing the projects throughout.

Gradually life did its work, and the Moslem masters adopted the ostentatious way of life of the Byzantines and the Iranians. It was from them that the Caliphate courts, in Damascus and then in Baghdad, derived their predilection for luxury of dress, for gold plate, for sumptuous feasts, and for royal pomp. The advent of Islam was at once a break and a continuation. What was seen in the field of art was not a form of parasitism, but an outcome of a deliberate policy or at least the result of an attitude of indifference. In the countries newly taken over by Islam art was a prolongation of the past. Umayyad and Abbasid caliphs called in Byzantine and Iranian artists, who continued working with their tried motifs. Taking over Byzantine procedures, the Arabs were happy to avail themselves of the existing system of public service. Technical and trade organization accordingly underwent little or no change.

Where populations were affected by Islamic proselytization, regional customs tended to be invested with a sort of common overlay. That the first artistic steps in the Moslem period were not less sure was due to their continuance with the old modes of expression. This early Moslem art escapes the *gaucheries* normal to arts in search of their mode of expression; it has already the refinement to be found only where the artists are sure of themselves.

Certain Egyptian wood sculptures show the difficulty of distinguishing sixth- from seventh-century work, the decorative motifs being either Greek or Sassanian. In the palace of Kasr al-Hair there is a medallion with a fabulous animal in the finest Sassanian style; there are also other frescoes of undeniable kinship with mosaics to be found in Antioch art of the fourth and fifth centuries.

Instead of breaking down the old cultures, the Arabs adopted and re-established them, with a certain amount of adaptation to the rule of life of the new community, which was gradually swelled by new converts. The same was the case with sacred art. While due regard is paid to the eminently practical and labour-saving device of re-using ancient and Christian columns and capitals, it may also be said that there was something of a triumph about this enlisting of the remains of religions that had been abolished, or at most tolerated, to serve the greater glory of Islam. The first mosques instituted by the caliphs at all events are an illustration of this. The mosaics of the Kubbat al-Sakhra and the great Mosque of Damascus show the Moslems making their choice among Byzantine cartoons. It should not be concluded that images

were proscribed; there was simply no place for them in a Moslem religious building. In Jerusalem, the main feature was decorations with a floral motif. Those at Damascus were in the Middle Ages a source of admiration for one Arab geographer, who described 'the trees, cities, and inscriptions, of extreme beauty and delicacy, of perfectly finished technique'. An identical situation resulted when, at the behest of the Umayyad caliph of Cordova, craftsmen came from Constantinople to make the mosaics. Those who examined them closely 'found neither in execution, nor in the processes and materials used, nor in the ensemble of the principal designs, any difference between these mosaics and those of Ravenna, Venice, and Monte Cassino'.

There is thus a lively persistence of the manifestations of civilization that had flourished in the ancient world; not until two centuries had elapsed did these diverse elements cease to be such and to merge into what was a living continuity dominated by the spirit of Islam. It is readily understandable that the Moslem spirit, with its sense of abstraction and stylization, should have contrived, by activity varying in intensity with the power and wealth of the dynasties, to gather unto itself, more or less happily, motifs with the invention of which it had had nothing to do. It is legitimate, therefore, to term this renewal generically 'Moslem art', since it took shape as part of what was an Islamic civilization; as part, that is, of an ensemble of techniques, institutions, and beliefs, common to all Islamic believers. From the Sassanids, the Moslems inherited their sense of proportion and their taste for nobility; from Byzantium, an unruly exuberance of decoration and a love of sumptuous materials.

Artistic Principles

The official seal was set on all this with the introduction of the Arabic alphabet as a decorative element and hall-mark. Behind this there at first lay a religious intention, a touching wish to dedicate to God not only the buildings in which he was worshipped but also (and this was more far reaching) the *décor* of life, in the form of the language of the Koran. The Arabic script is by no means least amongst the attractions of the Moslem monuments and works of art; it lends itself, like interlacings and scrolls, to graceful patterns. The elegance of the characters charms even in the absence of the understanding and knowledge necessary to grasp the meaning of the intimate thought. The calligraphists have made a masterly use of the happy balance of inflected curves and lofty stems. Calligraphy which endowed it with this special charm came to occupy a major place in Moslem art, becoming 'an accepted object of love and collection, as painting is with us'.

This introduction of Arabic inscriptions was perhaps spontaneous rather than the result of definite policy. In the field of art generally, however, Islamic society was becoming conscious of a need to clarify its attitudes.

Moslem doctrine became hostile to images of all kinds, and prohibited the representation of all animate things, men or beasts. It cannot be sufficiently emphasized that the Koran makes no pronouncement of any kind on this

question, and no attempt was made by the casuists to base their prohibitions on the Koran quotation sometimes referred to in this connection. The passage in question confines itself to the rejection of the stones stood on end beside which sacrifices were offered; in other words, and quite naturally, the Koran seeks to prevent any return to the old Arab paganism.

The doctors, both Sunnite and Shiite, based their absolute condemnation on the declarations of Mohammed, the essential tenor of which would seem to be that painters would suffer the most cruel of infernal punishments since they had attempted to imitate and rival the creative act of God.

It is believed that the Moslems came to a precise statement of their position rather late, under the Abbasids, at the time when a written record of the conversations of the Prophet was being started. The only authentic sign of such definite statement before then was a decree of the Umayyad caliph Yazid II in 722. This was, in fact, four years before the first iconoclast edict of Leo III the Isaurian, a chronological relationship from which it would appear that this was essentially a measure favoured in certain specific Asian provinces. The iconoclastic trend was not peculiar to Islam; before its manifestation there was evidence in Syria of a decline in the representation of men and a decreasing realism in the portrayal of animals. It is not without significance that a bishop of that region, Asterius of Amasia, should already in the fourth century have been complaining of the richness of materials which were covered with flowers and represented lions, panthers, bears, bulls, and dogs, 'in short, doing all that the work of the painter can to imitate nature'.

There were two types of dogmatists in Islam. The first were scholarly-minded and hard-set in attitudes, unable to compromise. Their enumeration of all they considered reprehensible is revealing as to their lack of contact with life. Not only did they proscribe images; they demanded the banning of gilded ceilings and floral-patterned cushions; they asserted that copyists should not reproduce tales; and condemned rhythmic emphasis in musical performance. The second group, who might be called active doctrinaires or minor Savonarolas, set themselves to agitate against the scandal of luxury. They made their vehement declarations just at a time of economic crisis, military reversal, and social disaster, when the luxurious living of the courts was in all too obvious contrast with the surrounding poverty. They declared that the wealth of the country must not be taken to pay simultaneously for a war and for the expensive tastes of the princes.

As far as religious art proper was concerned, the case was simple. The walls of mosques were not to be used for the illustration of metaphysical concepts or for the pictorial commentaries of dogma. The Moslem community was not in the position of the Christian church: the Islamic creed was clear and straightforward, its precepts formulated with a precision which made them easy to understand. So religious buildings were without illustrations, and Islam had no devotional images. Under no pretext must the risk of idolatry be run, and, if the austerity of the theologians carried weight anywhere, it was

in the matter of the adornment of the mosques. It should be noted, however, that in Persia artists did not scruple to insert star-shaped tiles, representing parakeets, dragons, and phoenixes among the faience panelling of the walls.

A walk through a museum of Moslem art, or a glance at a book about it, however, reveals that in general the representation of living things abounded, and this is a fact which cannot be left out of account. Moslem art has apparently been treated as monolithic, and the images, in view of the undoubted reality of the interdict, taken as exceptions, although occurring in steadily increasing numbers. It is clear surely that a distinction must be made between religious and secular art, between the buildings intended for worship and the objects serving to embellish everyday life.

The Representation of Man and Animals in Moslem Art

It is time that the place taken by human or animal in the décor with which the Moslem peoples enveloped their lives ceased to be regarded as exceptional. In every period, almost everywhere, and in every kind of material, are to be found representations of a very wide assortment of human beings and animals. It is neither the first nor the last time that a considerable divergence is to be found between doctrine and practice. Secular art reveals an almost universal use of images, which obtained everywhere except perhaps in Barbary, which at that comparatively late period was shedding Andalusian influence and withdrawing into itself.

From the early days of Islam, men and animals figure in the frescoes of the Umayyad palaces at Kusair Amra and Kasr al-Hair. (Pl. 45.) They recall the Sassanian palaces of Ctesiphon and those of their protégés, the Lakhmids, at Khawarnak in Mesopotamia. There is also evidence in books of mural paintings from early periods—at Medina from the seventh century, at Basra from the eighth. From this evidence we can see that fresco painting was not neglected by the artists of the Moslem empire, who had taken over the tradition from earlier civilizations. The caliphs adorned their palaces at Baghdad and Samarra with mural paintings. In Baghdad, it is known that one caliph, in a fit of piety, had these obliterated; and at Samarra excavations have also been most revealing. In Cairo, in the throne-room of the caliph's palace, wall paintings show hunting scenes and galloping horsemen; and reference is often made to an essential text quoted by Makrizi, which records the presence in the eleventh century in the Egyptian capital of painters from Basra, who had pupils in Egypt. Their work was a source of wonder to their contemporaries who were fascinated by the technical skill that gave their productions an illusion of relief and depth. In a belvedere in Old Cairo, one of the Fatimid caliphs caused the portraits of famous poets to be painted. This school of painters continued in existence in Egypt, for frescoes were painted in certain churches in the eleventh and twelfth centuries. From what has been said above one may deduce the importance of the frescoes discovered in 1933 in Old

Cairo, masterpieces of that Fatimid period which still command our admiration. Lastly, it is scarcely necessary here to do more than mention the paintings of the Palatine Chapel.

The caliphs and certain other rulers did not disdain to have their portrait impressed on coins. It is reported that the caliph Moawia did so; and coins are extant which bear the portraits of three Abbasid caliphs, the Ortokid princes of Mesopotamia, and even of Saladin. There is also now available a gold commemorative medal which has incised on it the bust of Buyid Adud al-Daula wearing Sassanian headgear.

Textiles. From the ninth century Egyptian textiles have human and animal figures vigorously portrayed on them, with violent colour contrasts; such textiles sometimes seeking to convey the deep incisions characteristic of the wood sculptures of the same period. The decorative themes, treated boldly and vigorously, include plaits, twists, and spirals, sometimes framing birds or quadrupeds which are portrayed with a certain brutality, showing that the artists were intent on strength, not grace. These tapestries are tremendously powerful, and have a slightly aloof majesty; they make an unforgettable impression of severe grandeur and incisive definition. The inclination of these Tulunid artists was to see things larger than life. The fabric designers of the Fatimid period, on the contrary, were exquisite miniaturists; their work had a fine, nimble line, catching effortlessly a procession of solemn fledglings or the antics of giddy hares. A textile inscribed with the name of the Umayyad caliph, Hashim III, bears medallions encircling animals and human busts, after the pattern of Fatimid fabrics. Nor must we fail to recall the artistic qualities of the Spanish silks, with their tangential circles framing fighting birds or animals, in repetition of the old Sassanian themes.

The art of Moslem Persia, including Mesopotamia, calls to mind something absolutely specific; it has a much more clear-cut character than that of Syria or Egypt, and it has the advantage of a certain clarity. Its artists were able to find inspiration in the pre-Islamic history of their own country. This adherence to the old formulas is one of the most moving aspects of a lively spirit of independence. There is an attraction also in the originality of the Iranians, the more so in that Persian influence is observable in other fields. To mention only cases which are very far apart geographically, the Spanish ivories are to be explained only by Mesopotamian influence, the mosque at Qairawan has faience tiles brought from Baghdad, and prince Ibn Tulun was to make known the art of that same region in Egypt. It is impossible, in short, to grasp the artistic development of the other Moslem countries without studying that of Iran.

Persia has for the last quarter of a century been yielding material of incalculable value, the most important being the fabric with elephants which is now in the Louvre. It dates from the tenth century, and so also, approximately, do a great collection of silks of sizeable dimensions and in a perfect state of

preservation. These were produced at the time of what has been termed the first Iranian renaissance. Here is an art not unworthy of the genius of Firdusi, the national singer of Persia. These silks display a mastery ripened into maturity, both technically and in the variety of their motifs, which were for the most part taken from the Sassanids. The groups represent either an animal attacking another which is its prey, or two animals confronting or turning their backs on each other, on either side of the tree of life. The tree is most variously presented. The beasts depicted included among the birds, eagles, falcons, ducks, geese, and peacocks, and among quadrupeds, goats, ibexes, camels, hares, and lions.

Ceramics. It may be objected that these fine fabrics were intended for princes, or at least for the very wealthy, and that in the Middle Ages they must, of course, have represented easily negotiable capital. They constitute only one branch of Moslem art, a somewhat exclusive one, designed for an élite. Such was not the case with ceramics, for among all the thousands of pieces preserved in museums, those which bear the names of kings may be counted on the fingers. Moslem ceramic art was directed, too, to the decorative effect, and the material was of little importance; with a very few exceptions, the vases of Islam are of ordinary clay.

There is, of course, the yellow or olive-green pottery with glazed decoration, which has been found in excavations at Raiy, Samarra, and Fostat, and this does not serve to simplify the problem. Things may, however, be brought into some sort of order. Fostat was influenced by Samarra under the Tulunids; and Samarra was for a short period a Caliphate residence, to which the caliph brought craftsmen from many countries. It is arguable that potters may have come there from Persia, and the pieces discovered at Samarra give a surer indication of date than of place of origin. Production of these ceramics extends over a period from the eighth to the tenth century. An extension beyond this would hardly seem possible, since the epigraphic characters are still in the archaic Kufic script. On almost all these dishes there are animals and human beings, represented in what is a fairly coarse style.

The Persian type known as *gabri*, with under-glaze engraved decoration, in tones uniformly green or brown, displays very typical motifs. Surrounded by the foliated scrolls round the periphery of the plate, an exceedingly lively animal disports itself, its movement more vigorous than graceful, its appearance massive and sharply delineated. Another Persian group, with decoration engraved on a cream background, tends towards the majestic. On a plate in the Berlin Museum, for instance, there is an eagle posed heraldically, in shades of green, blue, and purple. Already, however, artists were venturing on *genre* painting.

Next comes the most attractive ensemble of Persian ceramics, represented by two techniques, and in which scenes with animated figures occupy an important place. Firstly, there was the glazed faience work, with a brown or

golden yellow background. On this background, scenes stood out in reverse; sometimes, but very much more rarely, this procedure itself was reversed. Beside them were bowls and plates with polychromatic decorations, chiefly blue, red, and gold on a cream background. These pieces are an immense joy to contemplate: some have exquisite shapes, little playgrounds for miniature figures, with charmingly naïve expressions, and attitudes personifying languorous content. They evoke for us a society in which life was sweet, free from the stifling effects of austerity. The Persian ceramists also made their contribution to the revival of national feeling, by sometimes illustrating scenes from Firdusi's *Book of Kings*. What has been said of shaped objects is true equally of their faience tiles.

The art of the Fatimid faience-workers is not inferior to that of Persia. It goes in for a greater abundance of foliated decoration and less for *genre* scenes; the animal or human being, often isolated, occupies the whole of the base of a dish or forms the centre of it, surrounded by foliated scrolls and interlacings. It was the heyday of ceramic work with metallic lustres. In shape the pieces show a free-flowing flexibility; there were great swelling vases and deep two-handled cups. Human figures play a large part in the decoration; there are dancers, musicians, drinkers, graceful women, all absorbed in their particular activity. The Fatimid artists also produced ivory boxes, inscribed with the names of Umayyad princes of Spain, which were decorated in the Mesopotamian spirit, but also showed a kinship with Fatimid work in wood, in that the scenes portrayed are an evocation of the life at court.

The Fatimid caliphs of Cairo lived in magnificent luxury, and writers have written in ecstatic terms about their palaces. Carved wooden panels from these palaces are fortunately still in existence; they are convincing proof of an art which was sure of its techniques, and evinced a true concern for realistic presentation. This justly-famous work in wood presents, in cusped medallions which are found all round the Mediterranean, a series of scenes originally juxtaposed, depicting hunting, music sessions, dancing, and drinking. The artists from whose imagination they sprang have retained their feeling for balance and systematic disposition. Certain medallions even show groups of animals facing each other, some in postures of gracious repose, but for the most part in well-delineated action. (Pl. 44 b.)

The banning of images thus remained theoretical, but the effects of it were nevertheless perceptible on Islamic artists, or rather, it might be said that the ban corresponded to certain tendencies in them. They shunned the imitation of nature, exaggerating the geometrical aspect and observing a law of symmetry that made them imprison their leaf-work in curves which were born of an exuberant imagination. Disregard of the living model was a general rule: the draughtsman looked for the fountain of inspiration within himself, uninterested in what he actually saw around him. To this may be traced the popularity of geometric ornament, and the stylization of decorative plant motifs. The art which the Moslems cultivated was based on imaginative

vision, not on observation; hence the fauna which appeared in their works, sometimes heraldic, sometimes creatures of fantasy almost unknown to nature. It was the art of a dream world, seldom concerned either to present reality, or to portray the more intimate springs of the inner life; its intention was to astound rather than to move the beholder.

The canon of beauty derived uniformly from the same predilections. Realism is observed giving way to stylization; motifs taken from flower and leaf, deliberately distorted for decorative effect, are combined in patterns of inexhaustible invention. The foliated scrolls are reduced to tangential circles, made to enclose leaves, the points of which are disposed at carefully planned angles. These floral themes, of infinitely delicate curves, have always a quite remarkable amplitude and nobility. The Moslems usually took as their starting-point the Byzantine repertory, with its acanthus, vine-leaves and vine-branches.

The foliated ornament, with its harmonious coils, imparts a feeling of movement, but the geometric patterning leads the design back to repose and inertia. This kind of ornament was not of Islamic invention, but Islamic artists were to develop it in an unexpected fashion. There is an effervescent joy, a crazy delight in their contriving of patterns ever more complex and mysterious, in rare combinations often with supplementing shapes. There are interlacings of plaits and knots, spirals, wheels, zigzags, saw-toothed mouldings and archivolts; the recesses are fluted or decorated with radiating grooves. There is, nevertheless, a predilection for combinations of polygons. These, in patterns of extreme complexity, are to be found in all artistic work—on partitions, doors, *mihrabs*, and pulpits, on all kinds of curios, and in Koranic illuminations. They are not works of entirely unregulated fancy; they are carried out conscientiously and with probity. This type of decoration would seem to be the expression of an inexorable urge, for it remained in vogue in all latitudes and regardless of dynastic upheavals.

We can say, then, that instinct led these artists to express themselves in a decoration which derived from the imagination, and was also sometimes marked by a display of erudition. It was an abstract art, of stylized flora, which was sincere and free from all tendency to mystify. The artists are not observers of the external world, but were inclined to perceive the accidents of that world rather than its laws.

In their painting of animals, the artists of the Moslem period were not the inventors of the monsters, griffons, and winged quadrupeds (these came from Assyrian and Sassanian sources), but they were predisposed to adopt them by their tendency to sheer away from the imitation of nature. Similarly, scenes of animal combat and hunting were themes dear to ancient Iran. Many animals were certainly to be treated decoratively, which throws light on certain choices—the peacock, for instance, intent on ‘eliciting admiration for its new dress’. But there are also paintings, like those on the small bronzes, which are the work of artists who have looked on the animal with a spiritual eye and with a

tender affection—the camel, for instance, shown on a dish in the Louvre, where she is half turned to caress the offspring she is suckling. In this so attractive Fatimid period, a place of honour should be accorded to these portrayers of animals, and to their abundant, varied fauna, whether the animals be fashioned in bronze, carved on wood, cut out of crystal, woven into fabrics, or delineated on ceramics. In all probability these artists had observed the living originals of the familiar beasts they presented, but it may well be asked whether the picturesque descriptions of the Arab poets had not something to do with determining the direction they took.

The blending of animals with foliage effects, in spite of their great flexibility, was brought about according to mathematical rules that left nothing of the result to chance. The artists have a high degree of understanding of rhythm, tonality, and counterpoint. What they produce are decorative symphonies with botanical variations, and distinguished transpositions of nature. The discipline of Moslem art lies in the correction of certain apparent realities, or of what might almost be called certain optical illusions—an artist, for example, refusing to observe the laws of refraction. He knows, in fact, that, despite what his eye tells him, a stick plunged in water is neither shortened nor bent.

For decorative reasons, too, very large animals, such as the elephant, are not given a frightening aspect. Fights between animals are not intended to terrify, and violence is subordinated to majesty. Moslem artists are not oppressed by the hideousness of slaughter and treat scenes of carnage with serene indifference and without cruelty. All the animals, scrupulously drawn, are represented with great sympathy. Attitudes are never intended to be moving; verisimilitude is a secondary consideration to style and effect. The lions on the coronation robe of Roger of Sicily, their chests expanded as they crush camels to death, are typical of the Moslem style, with an eye always for the theatrical effect.

The deliberate distortions of plant or animal always have an air of verisimilitude, because they are made without awkwardness and, above all, without vulgarity. These artists make us accept them by virtue of their absolute sincerity. Certain decorations do not lend themselves easily to our kind of analysis: as with Arab poetry, attention must be given rather to the rhythm and the music than to the content, and the composition, with its mingling of the probable and the imaginary, demands a certain preparation.

When in certain regions artists turned to look at nature again, realism consisted in the effective rendering of movement; that exaggeration was avoided was because of a tendency towards affectionate humour. The artists of Islam must not at all events be looked to for the depiction of passion. Grief and pain are absent from their art: the pathetic is as completely excluded as is the conveying of any feeling of suffering or anguish. In the miniatures, a hand raised to the mouth expressed astonishment or affliction, a convention which was employed also at a certain period in medieval France. The consideration of decoration in Islamic art reveals two principles. In general, decoration covers

every surface: one is in a fairyland of ornamentation, which catches to the life the secret thought of the artists, who would seem to have thought it a disgrace to leave even the smallest part unadorned.

This astonishing richness is achieved by the juxtaposition of small motifs, but it is quickly apparent that the same foliated scrolls repeat themselves along the length of a line, forming a continuous interlacing of plants, and that the geometric ornament is also repeated over a certain distance. This deliberate repetition of symmetrical motifs attracts and irresistibly holds the eye. These combinations are satisfying for those who like to follow mentally a system of ornamentation which is limited by the shape of the surface to be decorated. Behind this system there must be a law: for the oriental connoisseur there is an emotional experience in the same motif continuously repeated. The Moslem spirit, moreover, did not welcome innovation, which it saw as representing a twofold danger, a break with tradition and a defiance of the community. This basic rule became almost an instinct, fundamentally opposed to any way of life or thought that entailed self-modification. An important consequence of this is the self-effacement of the artist. The artists relied on a technique that had to be taught, a technique which was transmitted in the workshop. As a result, sudden new departures are few; when they do take place, they can usually be traced to a sudden influx of new artists.

Architecture

The standard of official architecture, especially in the mosques, depended on the commissions received, and thus varied with the wealth of the prince and the quality of the artists he could afford to commission. Documentary proof of this is available in respect of the foundation of mosques at Baghdad and Samarra.

Here again, it is the very rare exception for anything to be known of the personality of the artist. The only differentiations possible are chronological or geographical. Facts permit us to deduce something about the migrations of artists. In Cairo, the most striking example is to be found in the walls of the Fatimid town, part of which is still standing, with its three monumental gateways. (Pl. 46 a.) By its perfection and style it makes a striking contrast to the contemporary mosques. It is said that the builders of it came from Upper Mesopotamia. Here is a masterpiece of stereotomy, unique in the art of Islam. The blocks that make up the arches have been meticulously shaped, and are fitted into each other in such a way as to defy the action of time. There is every conceivable kind of arch—semicircular, groined, cradled, pendentive, domed and multiple-moulded. Certain loop-holes are terminated by a stone elegantly shaped into the frustum of a cone; in another part, a spiral staircase may be seen winding round a pillar. At the end of the thirteenth century a group of Spanish craftsmen, driven out of their country by the Christian *Reconquista*, came to Cairo, and carried out repairs to the mosque of Ibn Tulun. Evidence

of their work survives in the shape of a console with crochets and twin windows with horseshoe arches.

The description of one of the oldest mosques constructed all at the one time will allow us to see the essential elements of a building intended for worship, without going into the details of all the sanctuaries or becoming involved in the maze of developments and influences. As has been shown, Moslem art was on the whole a flexible combination of the manifestations of the past, but it will be seen, too, that the mosque took on a personality of its own. Where an architecture truly imposes its originality is in its space-values: and in the structure of the mosque there is an area of open space which clearly sets it apart from the plan of a church.

The court of the mosque may have had a double origin. It may have been intended as a reminder of the first places of communal prayer—in the open air. In the early days of Islam the faithful used to assemble facing towards the lance, the *mihrab*, generally outside the city walls. But it should also be remembered that, in this Eastern climate, life was lived as much as possible out of doors, and in private houses it was the courtyard that was most important. There are spacious central courts in the Umayyad palaces of Syria.

Thus the early plans consisted of a court surrounded by porticoes, with a fairly deep sanctuary on the side towards Mecca; the other three sides were generally of less importance. Such a porticoed mosque had flat roofing resting, in exceptional cases, on pillars, usually on arcades of columns. The columns and capitals were to be found in plenty on the sites of antique and Christian buildings, and these were used as they chanced to be available.

The custom of the faithful of assembling for communal prayer in one long line led to building on the plan of an unequal quadrilateral, in which, unlike the practice in a church, worshippers faced one of the long walls. Mosque and church differed too in another respect. The church with its naves had a straining movement upwards towards heaven, while the mosque stood firmly planted on the earth, a symbol, as it were, of serene certitude, of fidelity and tranquil courage.

The minaret probably derived from the church-tower, and the style, spreading with the advance of Arab conquest, penetrated into Spain (Cordova, the Giralda of Seville), and proliferated thence into Morocco. Persia was to produce the cylindrical form.

The mosques of Quairawan and Cordova make a notable impression, the one with its sober line and rugged strength, the other with its polychromy and the lightness of its superposed arcades. The mosque conceived by Ibn Tulun in the ninth century in Egypt, which was undoubtedly copied directly from the building north of Baghdad, conveys all the calm gravity of the Islamic religious sense. (Pl. 47 a.) The design moves by its harmonious simplicity; without detriment to this, the architect has nevertheless contrived to make play with the contrast between the light in the courtyard and the shadow in the naves, which was accentuated by the thickness of the pillars. Inside,

moving in a space so pure that one is plunged into an atmosphere of meditation, one is struck by the height of the arcades, the fine proportion of line, and the depth of the cloister surrounding the court. The severity of the arcades, already lightened by the windows, is softened by a frieze of rosettes along the top of the walls. The one or two passages of stucco decoration convey an impression of artists of deliberate clumsiness creating a linear repertory which was left for succeeding generations to enrich. The minaret with its spiral staircase is odd; the original campanile must have had, like the one in Samarra, a gentle slope round a brick axis. In this mosque the visitor is at once held in thrall by the relentless light which falls on the court and the mystery that emanates from the slanting fleetingness of the naves.

Fatimid buildings also compel admiration. The al-Azhar mosque is still of universal fame as a centre of religious education. (Pl. 46 b.) The building has been successively enlarged, and has become an art museum. The plan of the mosque underwent a modification in which North African influence played a part. The nave leading from the courtyard to the *mihrab* became a sort of triumphal passage, distinguished by its direction from the side naves which are parallel to the *mihrab*. The mosque of al-Hakim has a porch, and the façade of the little sanctuary of al-Akmar fine sculptured decoration with motifs which later ornamentors took as models.

Structurally, it has been wondered whether certain flanged cupolas of mosques in Cordova and Toledo might not have 'sown the fertile seed in the minds of eleventh-century French architects from which the invention of the pointed arch sprang soon afterwards'. (Elie Lambert.)

Architecture in Syria and Egypt underwent a severe reorganization in the twelfth century, after the disappearance of the Fatimids, in the direction of religious and social conformism. This is the epoch of the creation of the *madrassa*, the religious college for the instruction of jurists and administrators. Architectural art presents itself naturally with a nuance of gravity: the word that comes to mind when attempting to define these reformatory tendencies is 'classicism'. (Pl. 47 b.) It was towards the second half of the thirteenth century that there was a renewed turning towards luxuriousness and to beauty of materials. The monuments consist of layers of black and white marble. Arcades with bi-coloured archstones and the decoration of certain voussoirs produce an effect rather like that of braided clothes.

In Persia the mosques had a generally grandiose aspect, in virtue of the majesty of the portals. These consisted of a rectangular framing in the foreground which led under a Persian arch, to a vestibule the vaulting of which resembled stalactites, with the door of the building at the far end. On either side of this framing, slightly recessed, were two twin minarets, which were shaped like slightly truncated cones, not unlike modern factory chimneys, often made of multi-coloured bricks artfully arranged in an ingenious design. The glazed brick at first used for architectural decoration was soon replaced by a facing of ceramic tiles.

In the buildings raised by the Seljuks, in Anatolia, chiefly in Konia, Caesarea, Siva, and Diwrigi, the portals are conceived on the model created in Persia, down to the framing minarets. New elements in detail are, however, to be observed. Lateral recesses are added to these porches, and there is a general ornamentation of extreme complexity, on occasion very heavy (great mosque of Diwrigi, 1228); and the semicircular arch has in nearly all cases replaced the pointed one. The Seljuks also took from Persia faience wall-facing, with which most buildings were plentifully embellished. Some mosques bear the signatures of Greek or Armenian architects, which point to a Byzantine contribution.

Seljuk art did not have time to develop to the point at which its real measure might be taken. The lack of unity in the architectural structure of buildings and of coherence in the ornament, each detail of which could be charming, understandably have their origins in the variety of influences at work.

C. Armenian Churches

A word is now called for about Armenia. The first Armenian churches are considered to date from the sixth century, but it is from the sixth century that one survives which was built to a polygonal specification that may be of Syrian origin. Then, over a relatively short period from the end of the ninth to the beginning of the eleventh century, there was a period of originality in Armenian architecture; there are sufficient remains of different buildings to give an idea of what it was like at this time. An architect of Ani, Tiridates by name, is famous as having been called to Byzantium to reconstruct St Sophia. Certain churches are decorated with frescoes: that at Althamar has paintings showing boars and lions, and bulls and bears confronting each other, and the king, holding in his arms the plan of the church.

The eleventh and twelfth centuries marked the apogee of Armenian architecture. It was the period which saw an enormous output of building work at Ani, Van, Althamar, and Kars, and the reconstruction of the church of St Gregory. In the twelfth and thirteenth centuries the country was under Georgian domination. During this era there was renewed activity resulting in many and varied buildings, which revealed signs of a new art. The geometric ornament which decorated the walls of Armenian buildings had reflected Moslem influences, particularly Iranian. All sculptural effects were now achieved by cutting into the walls, and decoration was carried out in accordance with the normal practice of Islamic art. 'In Armenia, churches were built by architects—and there were many in the Byzantine empire—whose characteristics bore a singular resemblance to those of early Romanesque art.'

Van Berchem has noted among the features which Armenian architecture has in common with the Moslem constructions of eastern Asia Minor the roofing of central-plan edifices, which is pyramidal where the structure is polygonal, and conical where it is circular. Here we can see how Armenia

influenced Seljuk art. 'The Seljuk mausolea with polyhedron or cylindrical ground-plans and pyramidal or conical roofs, are but cupolas of the Georgian and Armenian churches detached from their roofs and set on the ground'. (Orbeli.)

D. Miniaturists

It may be well to deal at greater length here with the miniaturists of the period under discussion; known as the 'School of Baghdad', they are entitled to a better recognition than they have hitherto received.

These painters owe much to the manuscripts of Byzantium, and to the Jacobite or Nestorian collections which are related to them, and to the fresco painters of central Asia. This last influence would explain the admiration accorded to Mani as a painter in Abra and Persian literature. It is clear, too, that the earliest Moslem miniaturists had very varied affiliations, Asiatic and Manichaean, or Christian, Byzantine and Syrian.

A Chinese text, dated earlier than 762, speaks of the study of this art in Mesopotamia with startling precision: 'As to crafts, such as light silk-work, goldsmiths' work, the fashioning of gold and silver, and painting, it was the Chinese who inaugurated all these traditions.' These Chinese painters came to give painting lessons in Basra. Later, in the first half of the tenth century, Chinese painters, who accompanied an embassy to the court of a Samanid prince of Bukhara, were commissioned to illustrate a Persian translation of the fables of Bidpay. Pictures were added, says the translator, so that everyone might have the same pleasure in seeing the book and reading it. These paintings aroused great enthusiasm in Transoxiana; so great that the term 'Chinese work' by which they were known came to be used as the name for book illustration generally.

Nor must we neglect consideration of those Iranian traditions which are evoked in a passage by Mas'udi.

'I saw,' he says, 'in the town of Istakhr, in 915, a great book containing the stories of the kings of Persia. In it were painted the kings of Persia of the Sassanid line; each one represented as he was at his death with his royal ornaments, his tiara, the hairs of his beard, and his facial features. The book I saw had been composed from documents found in the treasury of the kings of Persia, and completed in the middle of August, 731. It was translated for Hashim by ibn Abd al-Malik from Persian into Arabic. The painting was in Persian colours which are not found today, made from dissolved gold and silver, and powdered copper. The sheet was coloured a marvellous shade of purple. I do not know whether it was paper or very thin parchment; it was so fine and carefully treated.'

The manuscripts grouped under the heading 'School of Baghdad' date from the first half of the thirteenth century. The illustrated books of this period pertain to specific disciplines: treatises on botany, medicine, and pharmacy,

works on automatons, and collections of fables. (Pl. 28 a.) One genre that was an Arab speciality was a tempting proposition for the painters' lively spirit: the *Makamat* ('Assemblies'), a series of picaresque tales, the hero of which was an infinitely resourceful Bohemian. The few manuscripts which still survive, almost without exception splendid, testify to the popularity enjoyed by the illustrated book at this period in the East.

A famous manuscript in the Bibliothèque Nationale in Paris is dated 1237, and has miniatures by a certain Yahya ibn Mahmud Wasiti, of whom all that is known is the fact of his Aramaic ancestry, which is revealed by the name of one of his forbears, Kuwariha. Glancing through the manuscript, one sees clearly that the artist had his eyes open to daily life in all its variety. He shows official processions, caravan departures, even episodes on board ship in the Indian Ocean, an arrival in a village, the interior of a library, and a mosque sermon. (Pl. 16 a.) The artist is truly a master of lay-out and grouping; everything here conspires to give equal value to synthesis and detail. There might be a group of camels, for instance, at pasture: on the outside two animals grazing, and eight others distinguishable, by the turn of a neck, the carriage of a head, or the colour of the coat. Below, one has the feeling that not a hoof is missing. In another picture, the hooves of horses and mules are used to give the impression of mass, the more so because here the animals are carefully ranged, nostrils and ears in line, deaf to the noise of drums and trumpets. The framework is solemn, as befits a scene depicting the solemn declaration of the end of the Ramadhan fast: as background, unfurled banners; on the left, an immense standard, and on the right, long trumpets, as if to indicate to the animals a limit not to be exceeded. The setting out of a caravan for Mecca is treated, on the contrary, with incomparable verve: there are no longer soldiers or regimental oriflammes; here is a popular orchestra, beneath the flags of the brotherhood; the camels' lips are curled in attempted grace, and the carriage of their heads is conceived with a certain caustic irony. (Pl. 48.)

The painters of the Baghdad manuscripts combined with whatever degree of talent each possessed a marvellous sense of fantasy and humour. Their art, marked by this sense and with its fine vigour and powerful originality, is deserving of more than the sympathy of the specialist. The artists' mastery is expressed in a spirit of adventure and with strokes of audacity that succeeding centuries forgot when they slipped back again into conventional attitudes.

4. EUROPE AND BYZANTIUM

For those least acquainted with the medieval period, the wonderful series of churches erected throughout Europe and part of Asia Minor remain its supreme achievement. Such a view is well founded. In the European Middle Ages, as in most great creative periods, architecture dominated the other arts. In this period, religious buildings stood out as the most costly, ambitious, and imaginative form of architecture; they bore the expression of a whole complex

of emotional attitudes; indeed their secondary function was to diffuse these emotions among the Christian populace. Appreciation of the importance of the technical factors at work should not be allowed to obscure the closeness with which adaptation of the place of worship followed the dictates of a religious mentality and the demands of the liturgy. Furthermore, although it is scarcely permissible to see in these churches the collective work of the masses, they certainly were aimed at the entire population, which found them both an inspiration and a mirror of their spiritual needs.

A. The Church as the Focal Point

The church, then, and its construction and adornment, will be the focal point of this chapter, which for reasons of space must be confined to an outline summary. The point to be made first is that this was the period of the establishment of the basic structural principles of the place of worship, which for the most part were adhered to in the construction and adornment of churches until the twentieth century. In this connection, the greatest significance should be attached to the early medieval centuries, in which Latin and Greek Christianity as they diverged from their common point of origin, set in motion the evolution of two different traditions of Christian art. Of this phenomenon, M. Grabar has put forward what seems a very sound explanation, upon which we have gratefully drawn in this chapter.

The Basilica. In the first period of Christian art, two types of building are to be discerned, differing in plan, roofing, and decoration. The usual place of worship, in which the Eucharistic sacrifice was celebrated, was the basilica.¹ In its basic plan this derived from Roman architecture and consisted of an oblong hall divided into three—a central nave and two aisles—by lines of pillars, and terminating at the eastern end in a semi-circular apse. The roof was usually of wood. The decoration was didactic in character, and was intended to substitute for, or supplement, the written word by visual representations (so indispensable to the illiterate) of episodes from the Old and New Testaments.

The Martyrium. Martyrs were honoured by the raising of edifices, modest in scale at first, over their graves in the suburban cemeteries. The construction of these martyria followed, as might have been expected, the already very varied designs used in earlier funeral mausolea: they could follow a square, polygonal, or circular central plan; there were three or four apses—sometimes one apse, with or without a corridor; usually the plan was that of a cross, sometimes inscribed in a square or circle. They were roofed by vaults or domes, not merely because these accorded well with the general design, but because they symbolized the dome of heaven. The decoration depicted the manifestations of God to man, 'theophanies' akin to the subject commemorated

by the martyrium of which the most striking were of course the life and miraculous acts of Christ. By these 'theophanies' the worshipper was brought into the presence of the divine, and the place of worship itself was protected, for it was thought that the images used were possessed of a measure of that same divine power which they represented. Baptisteries, in which the water of the sacrament was, as it were, imbued with divine force, were built and decorated after a similar fashion.

Relics. This dualism in religious building is found in both Western and Eastern Christendom. The functional division, however, was not absolute. The cult of the martyrs included a sacrificial meal, and was thus often assimilated to the Eucharist of the Mass. A parallel was equally naturally established between the Passion of Christ, commemorated and renewed at the church altars, and the sufferings of the martyrs. It became general practice, and in the fourth century an established rule, to place under or within the altar (which was taken as representing the tomb of Christ) the body, or part of the body, of a martyr. In western Europe, where relics were less immediately available, this privileged place could always be allotted to them; in the eastern Christendom, once the altar had its relic, others were, without hesitation, placed elsewhere in the church or its precincts.

Basilica and Martyrium are United. So, between the fourth and sixth centuries, the distinction between basilica and martyrium disappeared. But the union was effected differently in Eastern and Western Christendom. In the former, the design of the martyrium as well as its ground-plan, roofing, and decorating, were carried over into and eclipsed that of the church proper; the original distinction between the two was earlier and more completely effaced. A contributory factor, apart from the abundance of relics, was the decline of the relic cult, being superseded by the cult of the icon. This was followed by the screening of the sanctuary from the faithful by a wall which later provided an eminently suitable space for the display of icons. In the latter, the cult of relics retained its vigour; every relic was entitled to its own altar in addition to the high altar, and the entire eastern end—or chevet—finally assumed the function of the martyrium. The Western church was thus to evolve as a combination of martyrium and basilica, differing from the latter by the now greater size of the chevet.

Between the seventh and ninth centuries this latter divergence became very much in evidence, doubtless precipitated by the difficult economic conditions of the time, which made necessary an 'art of contraction'. Large or numerous divisions to a building were now out of the question. Basilica, martyrium, and baptistery had for the most part to be merged. At the same time, the decline in technical skills entailed an impoverishment of the tradition; designs had to be confined within a range of a few fixed types, and this in itself contributed to a regional differentiation. This period of instability, extending at least into the tenth century, presented western Europe with a special set of problems.

The timber-roofing hitherto used for church naves involved much too serious a risk of fire. In consequence, it became necessary to construct a stone vault, not only over buildings of central design, but also over those with long extended naves. The search for technical answers to this challenge was to continue well beyond the thirteenth century; whereas, in Byzantium, the basic models were already fixed as early as the tenth century.

B. Byzantium

The history of Byzantine religious architecture is the story of the establishment, between the sixth and tenth centuries, of certain fixed styles. Even before the Arab conquest, the various provinces of the Empire had displayed their preference for various types of martyria: Egypt, for churches with a chevet of three apses; northern Mesopotamia, for apses of extensive breadth; Armenia, for chevets with four apses or of a polygonal shape with several apses. (Fig. 19.) Byzantium itself favoured the inscribed cross plan. Only Syria, where the basilican style, roofed in timber or flat stone blocks, was pursued with brilliant results, stood somewhat apart from this development.

At this time the basilica with a cupola appeared—in various guises—in the Transcaucasian provinces and in Byzantium. This was a hybrid style since its architects, without going so far as to replace the basilica by a martyrium, confined themselves to adapting the martyrium cupola to the basilica. Part of the merit of this first Byzantine golden age, the 'century of Justinian', consists in its diversity. For instance, the church which is with justice rated as its greatest masterpiece, St Sophia at Constantinople, is not representative of it in all its aspects; nor can this building itself be reduced to a simple type. (Fig. 20.) Its ground plan is that of a cross inscribed in a rectangle only very slightly greater in length than in width, divided by colonnades into a nave and aisles as in a basilica. What is primarily exceptional about it is its size—the cupola is 102 feet in diameter, the elevation from ground level 177 feet. For the vaulted central plan scarcely favours the building of very large edifices. The problems involved in the construction of a cupola of extensive diameter are formidable, as the falling down of the cupola of St Sophia in 558 testifies clearly enough; and difficulties arise in the liturgical use of the side areas. But whatever the reason, it is remarkable that the Byzantine world never experienced the compulsion that western Europe felt from the eleventh century onwards, to increase the size of its buildings to a point where complete structural replanning became necessary.

The Greek Cross Plan. In fact, although several of the types of church described above persisted through several centuries, the range of Byzantine architecture contracted, and the inscribed Greek cross plan became increasingly the rule. The Arab conquest, which checked the development of several provincial schools, the move towards centralization, the fairly strong traditionalist attitude and perhaps also some aesthetic preferences, confirmed this type in

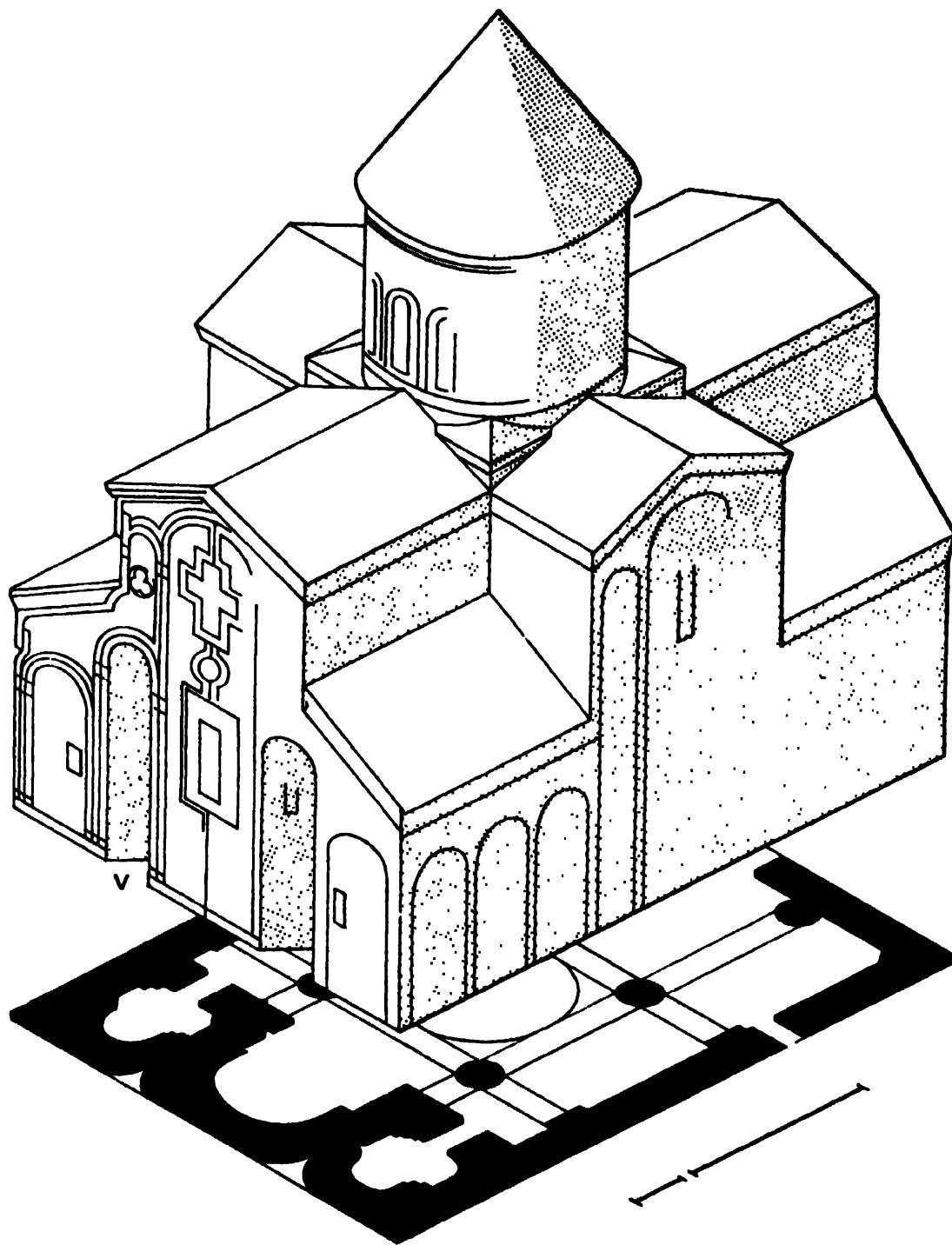


FIG. 19. Partial plan and elevation of an Armenian church (after Auguste Choisy).

its predominance. In it the thrust of the cupola is taken by four barrel-vaults, the axes of which intersect at right angles, the whole producing, within the square, a cross with roughly equal arms. (Fig. 21.) The type was brought to perfection in the tenth century; subsequent variations were of detail only.

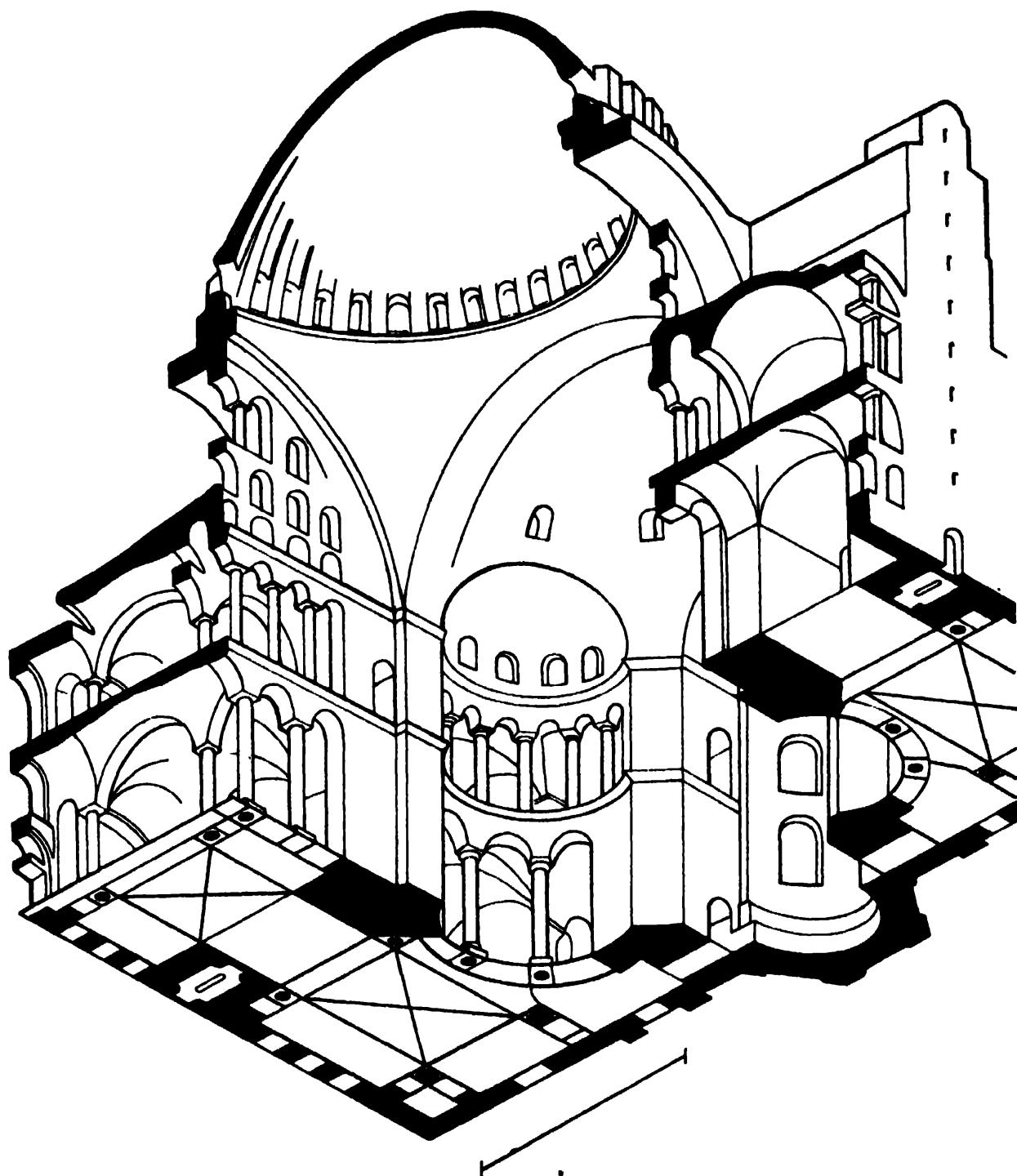


FIG. 20. Hagia Sophia, Constantinople (after Auguste Choisy).

Church Decoration. Church decoration had also been stabilized. The distribution and content of this depend on the underlying conception of the function of the religious building. For the Greek mystics of the fifth and sixth centuries the church was the Martyrium of Christ. The iconography should commemorate God's manifestations of himself through Christ. Around the vision

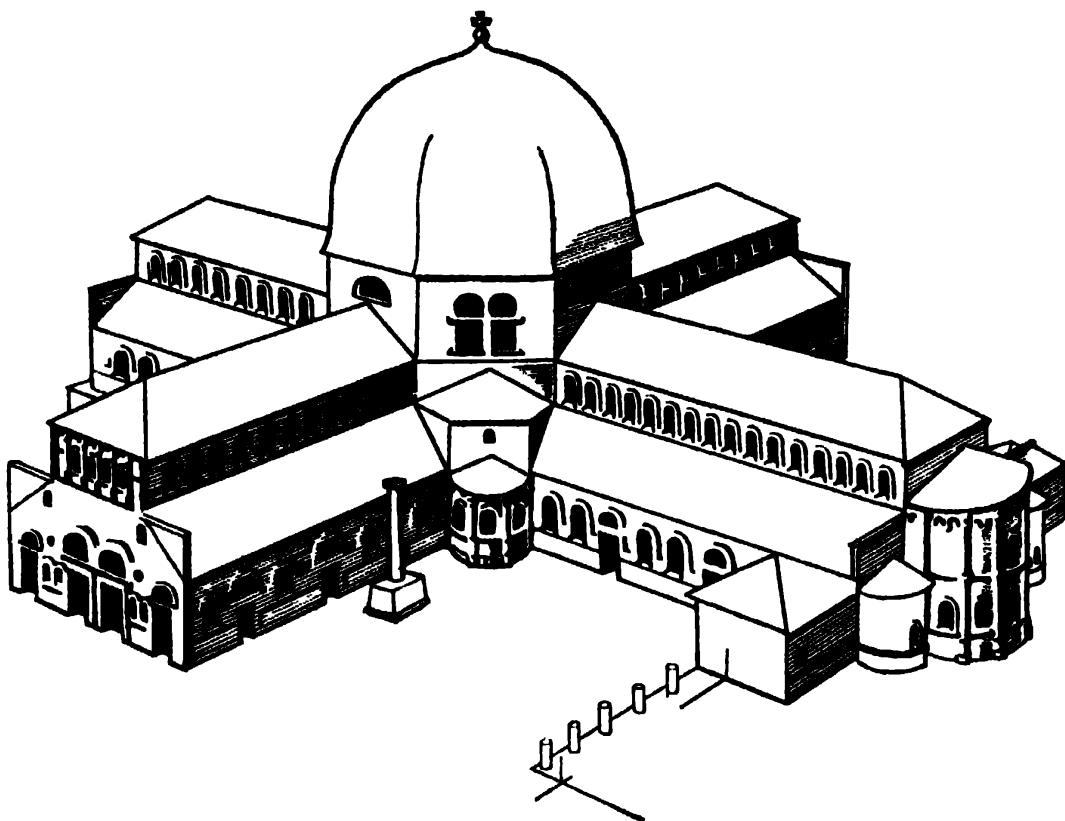


FIG. 21. Reconstruction of Kalat Siman (after E. Baldwin Smith).

of God, surrounded by his saints as the Basileus by his official hierarchy (this vision was placed in the semi-dome of the apse) was unfolded the Christological cycle, according to the theophanies of Childhood, Miracles, and Passion. The screen that concealed the 'holy of holies' from the 'faithful' bore the most venerable images of Christ and the Virgin. Those of the saints were to be found usually in the side aisles and less important parts of the church, not in the prominent positions they occupied in western Europe. In Byzantium, the saint was primarily part of the celestial court, his rank there ordained by an etiquette no less strict than that obtaining in the imperial palace. The emperor also frequently figured in this iconography, as a victorious general or as a humble monk, or often as both, the two representations being set side by side.

Effects of the Iconoclastic Controversy. The iconoclastic controversy, of course, also had its effect here. The onset of the crisis was accompanied by much destruction, and a search for alternative themes. From the victorious faction of the image worshippers the doctrine of images received a precise formulation, and by the tenth century the iconographic programme had been fixed. Thereafter, images were copied strictly from established prototypes.

The Religious Image. The idea of the sacred character of the religious image was in any case never to be allowed to lapse. The Holy Spirit had his dwelling

there, and contemplation of it was a means of salvation. It should be as little evocative of terrestrial things as possible. To represent the saints in their earthly guise would be, in the words of St John of Damascus, to 'deprive them of the honour they enjoy in the house of God now that they are with Him'. They should be shown as they might appear in Paradise. Hence came the frozen postures, the air of immovability, expressive of a superhuman impassivity, the sign of sainthood; hence the disproportionately enlarged eyes, reflecting a soul imbued with intense spirituality, opening a way to communion with the Divine.

Mosaics. This decoration was also obviously oriental in character, both in its extent and by the important part which colour played in it. The materials used in construction were scarcely noble (for example, brick, and quarry-stone sunk in mortar), and called for concealment inside the building beneath a continuous shield of marble slabs, mosaics, and frescoes. The main effects of such decoration were achieved through the sparkle and play of colour. It is by the stage of evolution of the colour that the mosaics can be dated: the blue backgrounds were almost universally replaced from the sixth century onwards by gold, and sometimes silver, and shadows, indicated until the eleventh century in brown, were later green. An equal brilliance was sought after in the frescoes. These frequently appear to us rather old-fashioned; but by the justness of their proportions, the dignity of attitudes and the richness of colour, the best of them continue to impress.

The Disappearance of Relief. Relief, on the other hand, became increasingly less perceptible. Sculpture in the round, represented hitherto by a few monumental figures of Christ and the emperor, failed to survive the iconoclastic crisis. All that persisted was a decorative sculpture, confined to cornices and capitals. The depth of the relief, too, was indicated less and less: in St Sophia, for instance, the ornamentation is like lacework in stone, with cavities of shadow bored with a drill. The eleventh century saw the spread of the *champlevé* technique, where the very slightly hollowed cavities of a previously traced design are filled in with a dark substance.²

Byzantine Art Not Exclusively Religious. This art is religious, and religious in a double sense, theologically and transcendentally—theologically because its representations are strictly ordered by dogmatic concepts, and transcendentally because it is seeking to make real the Divine presence. But is it only religious? We must take into account here the tremendous destruction that took place not only of many churches but also of imperial palaces, and with them their historical paintings and all their décor, the dazzling richness of which is known to us only through written descriptions. Had any sizeable remnants come down to us, we might well have reached the conclusion that Byzantine art was less exclusively religious than it appears now. We might well have concluded that, as art was impressed into the service of a power, which

was exacting in the extreme in all that concerned appearances, and was set amid a wealthy and cultivated society, it could not have remained concentrated exclusively on religious buildings to the extent that it was, over a long period, in those other poverty-ridden and more primitive countries. The minor arts, especially, are pointers in this direction: miniatures, for the most part given over, certainly, to religious subjects, but also intended in many cases for an aristocratic clientele to whose tastes they were attuned; ivories, holding closer to the tradition of antiquity, by reason alike of their technique and of their price, which made them available only to the connoisseur of means; silk materials and historiated stuffs, worn according to the rules of protocol; objects in gold and enamelwork.

Renaissances in Byzantine Art. The conception of Byzantine art as uniform and static is inaccurate. Renaissances, such as that which occurred in the tenth and eleventh centuries, are evidence of the organic vigour and the capacity for renewal which the Byzantine world retained for longer than is often remembered. The spread of its art through the Slav countries demonstrates also the potentialities inherent in it for adaptation to very different material conditions and to meet very different demands. Thus the Kiev church of St Sophia asserts its originality in its size and the juxtaposition of frescoes and mosaics; while the churches of Novgorod, less ambitious and simpler, had the narrow windows and cupolas poised on high piers that a cold, wet climate demanded. The Byzantine renaissance which irradiated its influence among the Balkan Slavs, of the fourteenth and fifteenth century, went still further in emphasizing motion, emotion, and naturalism; but the strength of a glorious tradition prevented Byzantine painting from going as far in those directions as did the Western artists of the same period.

C. The Latin West: Problems and Experiment

Starting from roughly the same point as Byzantine art, the art of western Europe proceeded to different solutions. Here, the martyrium did not supplant the basilica; the two structures were combined. The tradition of the martyrium was perpetuated, certainly for centuries, in buildings which were centrally planned. More often than not, a Byzantine or even Armenian influence has been postulated for these buildings; it is true that their type had originally been common to both parts of Christendom, but it gradually lost favour in the West.

Relics. In western Europe, where relics were less numerous, their cult retained its vigour. Every relic had the right to its altar. The apse in consequence assumed the secondary character of a martyrium, as well as its shape and adornment. Moreover, many of the faithful wished to be buried near the holy remains, persuaded that they would be helped by forces emanating from them, and be carried up with the saint to Paradise.

St Peter's in Rome is an example from as early as the fourth century of additional structures joined in unsystematic arrangement to the main building: private mausolea around the apse, smaller oratories at the sides. The problem now was the ordered integration of these additions—the oratories as lateral chapels, and, more especially, the mausolea, by an expansion of the chevet.

Church Plans. The ways in which this problem of integration was solved varied. Except in Italy, the various religious buildings—church, baptistery, and belfry—were usually combined in one. The fully developed scheme was to place the crypt under the altar, at the entrance to the apse, and surround it with a corridor, or ambulatory, on to which opened small apses, arranged either in parallel or on a radiating plan. But other designs were also followed until well on in the period. In the tenth century, churches like St Bénigne at Dijon incorporated into the choir of the building the whole rotunda of the mausoleum; in the twelfth and thirteenth, in England in particular (for example, Canterbury and Lincoln), the addition of rectangular chapels at the sides of the choir gave it the shape of a cross. It is well to emphasize this persistent experimentation, and the diversity with which it enriched a general development which in this account we must over-simplify.

In the Latin West, at any rate, the choir, far from being closed to worshippers, tended to extend down into the nave, while the requirements of ceremonial led to the frequent development of a transept in front of the altar.

Vaulting. The chevet itself, true to its martyrium origin, was always vaulted in stone, even in the days when timber roofing was the rule for the nave. The risk of fire, however, heightened by invasion and social instability, led to the elimination of this distinction as the problem of vaulting the nave was tackled. This was the second great problem which, over most of Western Christendom, engaged the attention of the church-builders. It was one which presented itself in increasing complexity as the demands of ever-growing congregations led them to build churches of ever-growing proportions. The problem of vaulting was in itself not new; it was new, however, in the form in which it now presented itself, and under the technical and labour conditions which prevailed in western Europe at this time. This last consideration should set in better perspective the archaeologists' discussions about origins. In short, whereas Roman vaulting used concrete and Byzantine vaulting bricks and/or tile, Western vaulting was of cut stone. Most of the solutions experimented with from the ninth to the thirteenth centuries had been in existence before that, in basic principle at least, but the development of them had not been carried as far as was now required.

Decoration. Finally, decoration had its own set of problems. It was regarded as of secondary importance, for there was as yet no such veneration attached to images in Western Christendom as there was in Byzantium. The human figure was rarely represented. Decoration was confined to a few clearly marked areas:

the lintel and the tympanum, the capitals, and the cornices. It had therefore to be adapted to these areas, a task made even more difficult than it might have been by the decline in technical skill that was holding back the reappearance of the human figure. Sculpture thus early took a subordinate place; and Romanesque painting, as it was later extended through the building, respected the values of the mural mass. Yet it was from these early constraints, and the difficulties imposed by poverty of resources and techniques, that the grandeur of 'Western' art is in part derived.

The Carolingian Renaissance. Such was the general background: it took shape in the course of that vitally important period from the seventh to the tenth century, which was also the period of the first tentative experiments. Among the experiments which are singled out for study here are the 'Carolingian Renaissance' and the 'early Romanesque art'.

Among the buildings of the 'Carolingian Renaissance', the chapel at Aachen and the church at Germigny-des-Prés, the central plan of which harks back to the past or rather to Byzantium, are less deserving of attention than are others, unfortunately in great part lost, which are distinguished by the feeling for the monumental and the technical achievement that they represent. Renewed contact with Roman architecture probably had some influence on their design. The great Benedictine churches, such as St Gall and St Riquier, are colossal in aspect, the more so by reason of their double apses and, in some cases, double transepts; they give the impression of being two edifices united by their façades. It is important to note in some churches the appearance of a semi-circular corridor passing round the choir, and flanked by apsidal chapels —the first steps in the development of an ambulatory.

Where decoration was concerned, primary importance attaches to the return to the portrayal of the human figure. This was, however, as yet confined to mural painting, or to the minor arts, miniatures, ivories, and small bronze sculptures. Full-scale sculpture in stone had not yet reached a stage of development at which it could attempt similar experiments. It had to be content with accumulating themes and making experiments in composition, in which respects it was later drawn on to advantage by Romanesque sculpture. In this connection, mention must be made of the strange fantasies of the Irish (doubtless partly Anglo-Saxon) miniature, which showed men and animals distorted to form letters, or intertwined designs, to the decorative effect of which they contributed. There were figures of men twisted to form honeysuckle ornaments and spirals, and representations of stylized animals. Here was the precursor of the sculpture subordinated to the overall design of Romanesque art, not yet in evidence in the art of the 'Carolingian Renaissance'.

The Ottonian Renaissance. While the extension of Carolingian art to west and south was not inconsiderable, the full flowering of this revival took place in the tenth and eleventh centuries in the regions of the Rhine and the Meuse and in

Germany. It was there, with the impulse of the 'Ottonian Renaissance'—as a new revival, favoured by Otto I, II and III, is called—that its formulas persisted. The enormous timber-roofed basilicas of the Rhineland, and many churches of the eleventh century, together with, in another genre, the metallic arts, were to give evidence of its continued life.

Early Romanesque Art. The home of 'early Romanesque art', first accorded recognition through the work of Puig i Cadafalch, was, by contrast, the shores of the Mediterranean. It was characterized by construction with small stones; by the systematic adoption of an exterior décor of blind arcades, often resting on slightly projecting pillars (known as 'pilaster strips') and, sometimes, of niches; and finally, by heavy and clumsy nave vaulting as yet bearing evidence of strain. From its appearance at the beginning of the eleventh century, it continued into and beyond the twelfth. Its geographical extension is easily determined. It extended from Dalmatia to northern and central Italy, and from the southern littoral of France to Catalonia—a sort of 'Latin zone'—whence a branch went out northwards to Burgundy. Puig i Cadafalch sees in it an art of eastern origin, an architecture of brick which was born in Mesopotamia and diffused via the world of Islam.

Between these zones of Carolingian art and the 'early Romanesque art' lay a wide terrain in which the formulas found definitive expression much more slowly: but there also they were carried to a fullness and a degree of perfection that assured them an immense success.

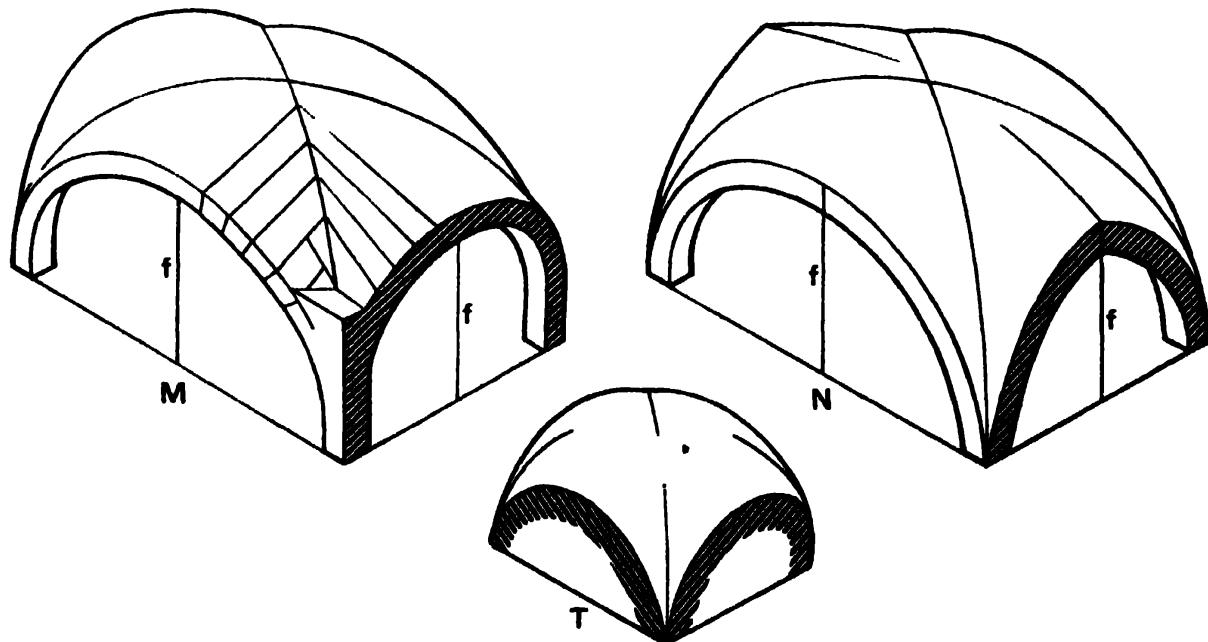


FIG. 22. Groined vaulting (after Auguste Choisy). M: vault on semi-circular arches; N: vault with semi-circular and pointed arches on the long and short sides, respectively; T: Rhenish vault with emphasized curving sections.

D. Romanesque Art

To the problems enumerated above, Romanesque art contributed solutions which were already those of a mature, a self-possessed, a 'classic' art. The ground-plan here allowed for the gathering of large numbers of people, not only for ordinary religious worship but also, especially in the great places of pilgrimage, for the veneration of relics. Entry to the church was in some cases by way of a vast narthex or ante-nave, which was divided into three, or even five. A transept, on to which opened several chapels, was perpendicular to the main apse. The dimensions of this transept might be so extended as to constitute a transversal church, with secondary means of entry and exit. The essential part of the building was the chevet, with its crypt and choir, ambulatory, and (usually radiating) chapels. The church was, in virtue of the chevet, a vast reliquary.

The Nave. The central nave was customarily barrel-vaulted with or without the support of arch-bands. Equilibrium was obtained through the buttressing action of the aisles, which were often groin-vaulted. (Fig. 22.) These were either almost equal in height with the main wall (as in Poitou) (Fig. 23) or they had above them tribune galleries whose vaults buttressed the nave vault (as in Auvergne) (Fig. 24) or, in the work of bolder architects, the central nave was raised above all side support (one of the features of Burgundian Romanesque). (Fig. 25.)

The Chevet. The elevation of the Romanesque church is equally remarkable for its plastic effect. This is seen in the façades, with their many grouped porches and one or more integrated towers. But the impression of greatest power and harmony is produced by the chevet, with its combination of circular and rectangular volumes, and the ordered progression from the roofs of the chapels to the top of the spire. (Fig. 26.) The building reveals the plan and ordering of its structure: this 'readability' of the parts is a characteristic of western European architecture.

Building Materials. Tribute must also be paid to the light effects, conceived as a function of the materials used. The arch-bands, their definition sometimes heightened by polychrome decoration, endow the nave with a strongly rhythmic quality. According to whether the material used is Languedoc brick, the soft limestone of Poitou, or the dark Auvergne lava, the interplay of solidity and space and the richness of the decoration are skilfully varied. There is always, however, respect for the character of the architectural whole and the values of the mural mass.

Regional Differences. Allusion has been made to regional differences. It is no longer possible to persist in a belief in the existence of regional 'schools', each exclusively dominant over a clearly demarcated area. The factors involved are too diverse and interaction too frequent; and the pilgrimage routes, acting as

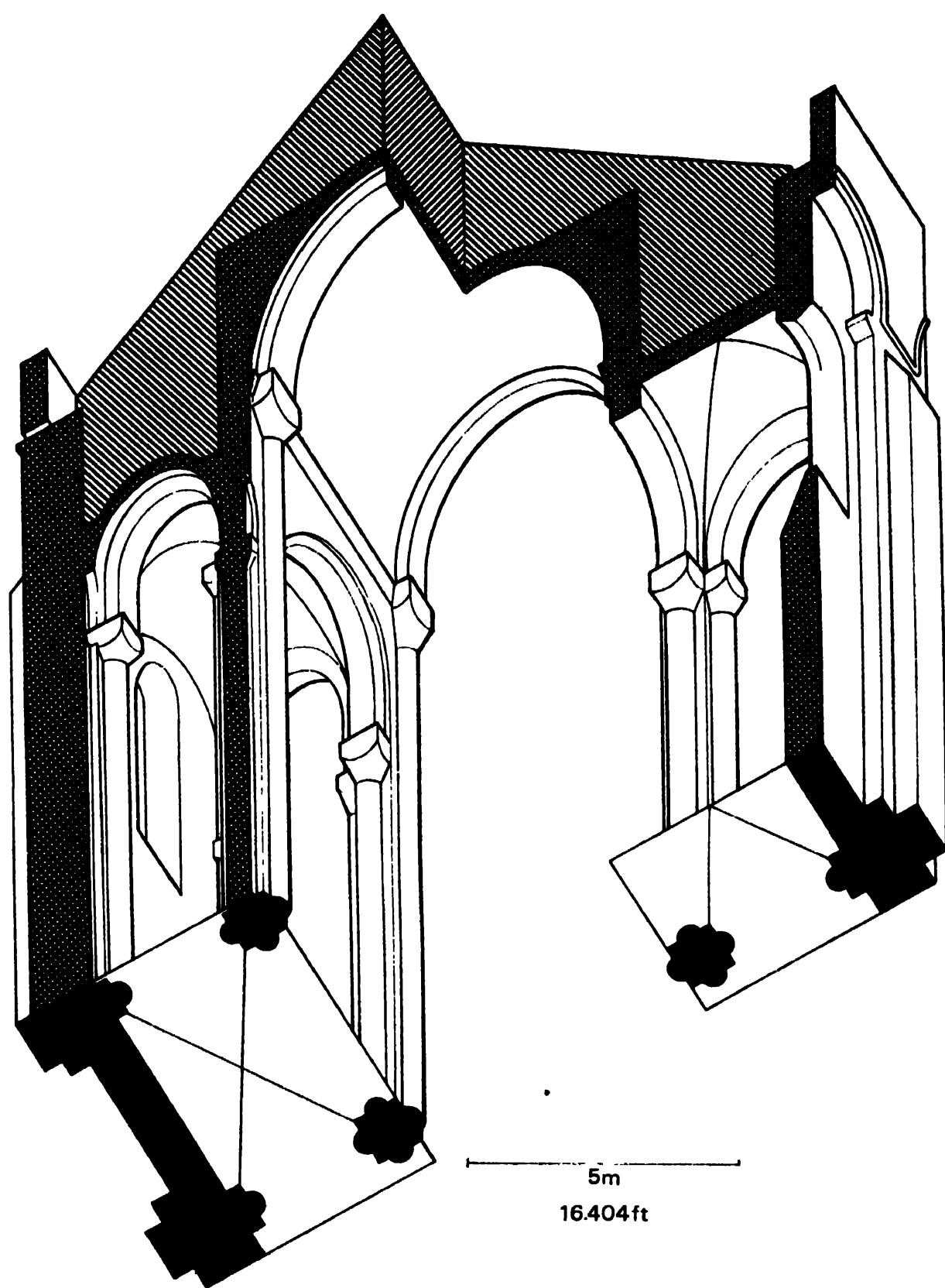


FIG. 23. *Notre-Dame, Poitiers* (after Auguste Choisy).

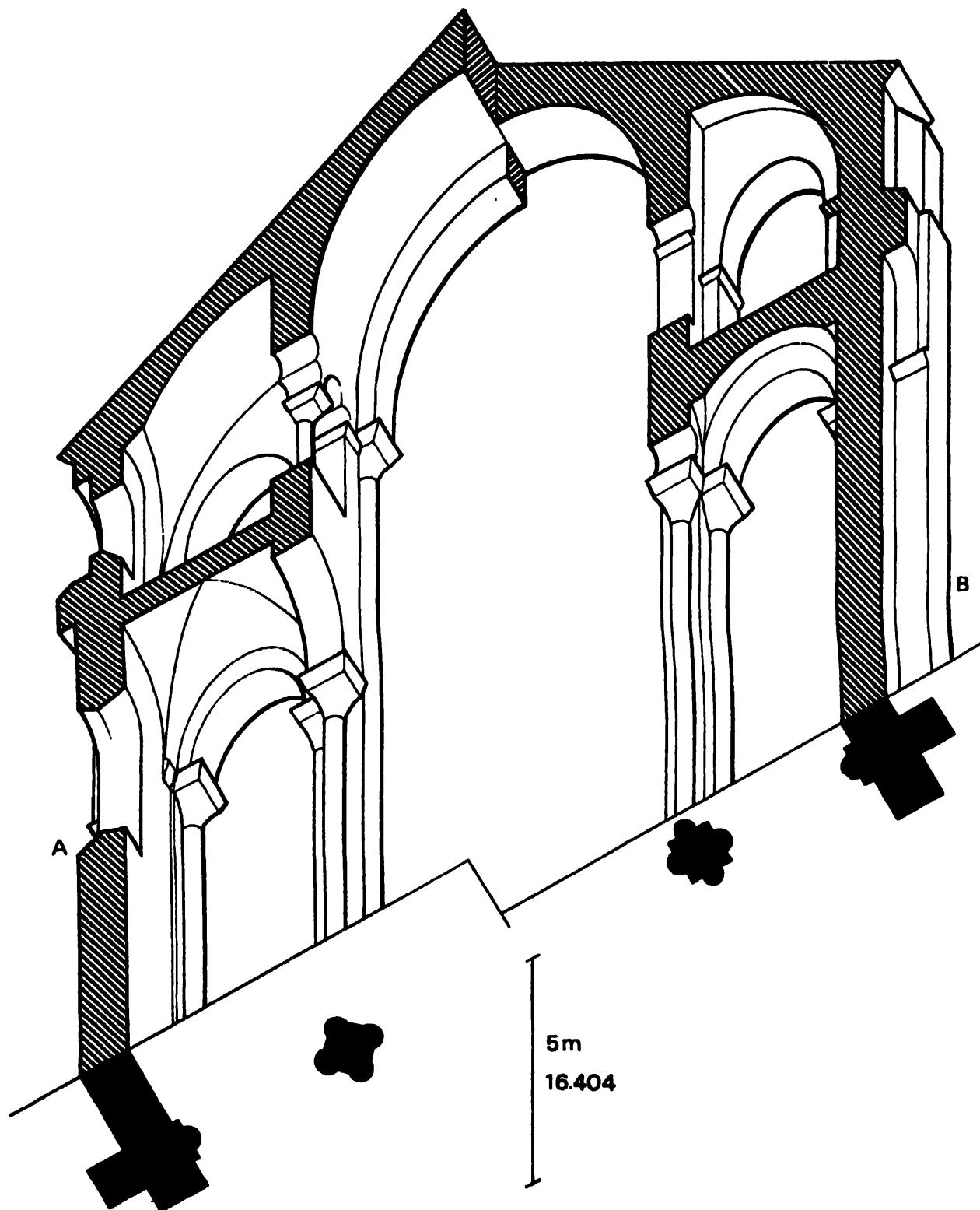


FIG. 24. Issoire, Puy-de-Dôme, France (after Auguste Choisy).

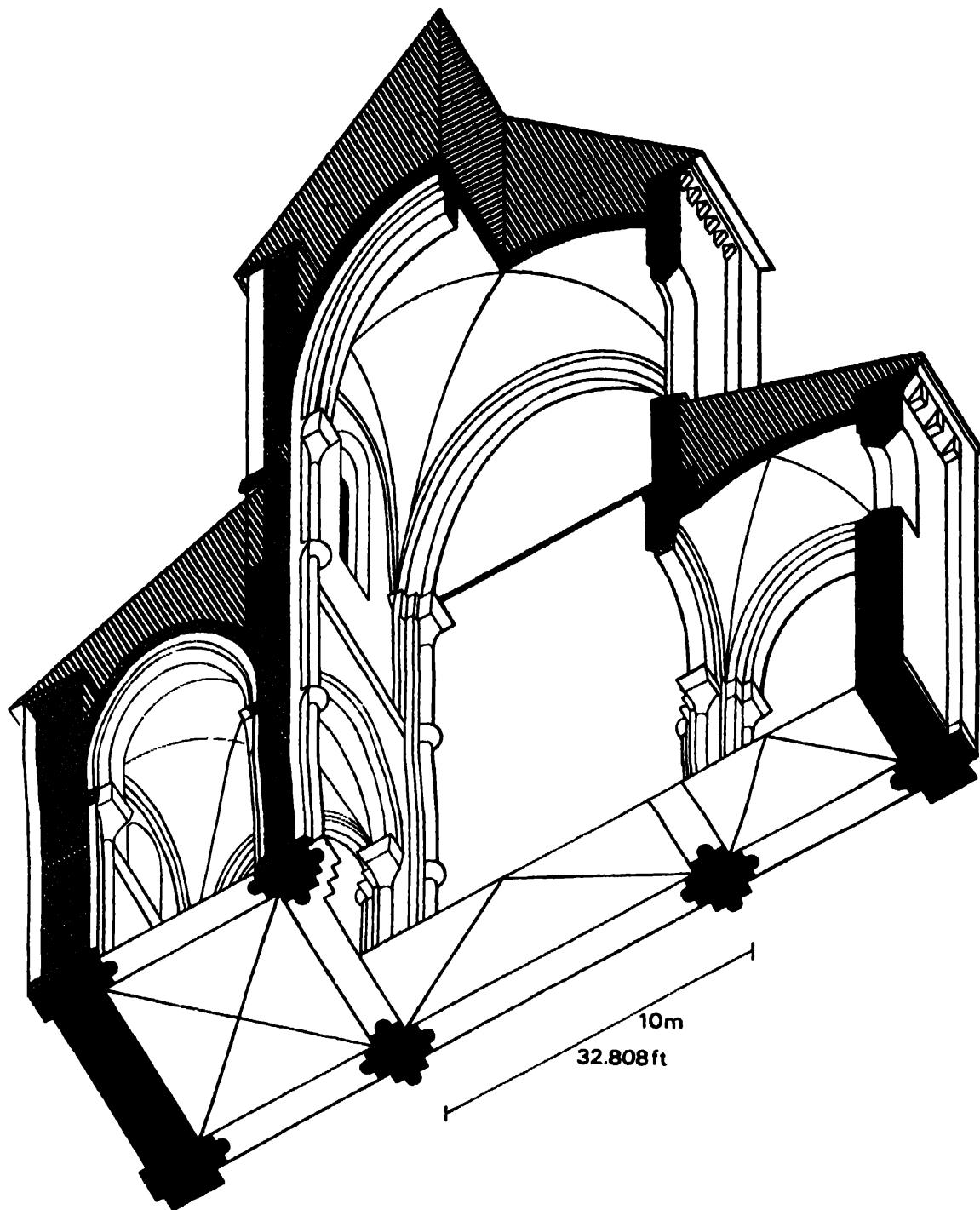


FIG. 25. Vezelay, Yonne, France (after Auguste Choisy).

diffusers of certain styles, effectively disturb any such artificial ordering of things. For instance, all along the ways to Compostela, from Tours to Limoges, Conques, Toulouse and Compostela itself, a huge type of pilgrimage-church was created and reproduced (end of tenth to beginning of twelfth century). It is true none the less that Romanesque art was the product of a number of

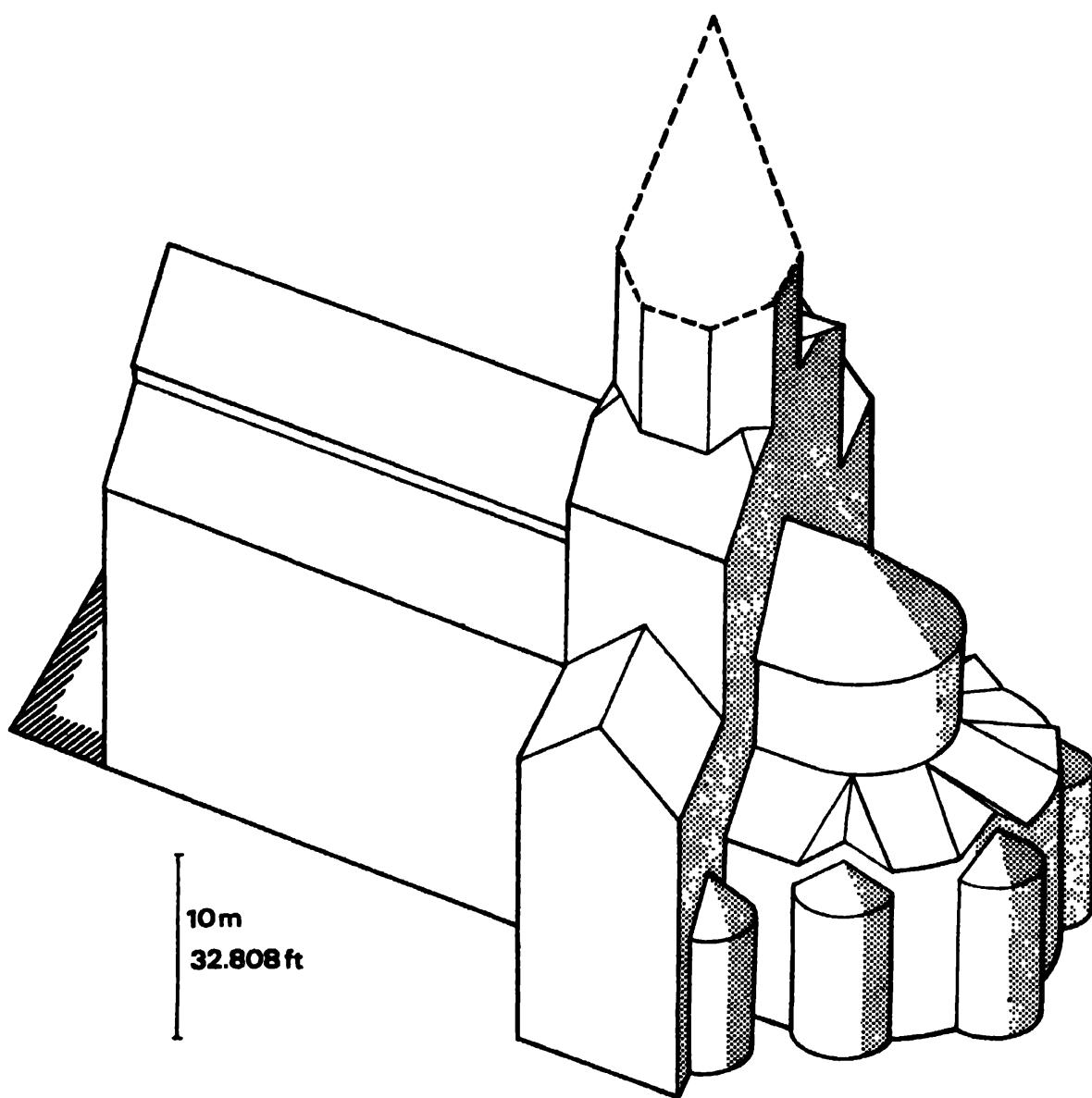


FIG. 26. The massing of forms in a Romanesque church of *Auvergnat* type
(after Auguste Choisy).

experiments made at the same time, in accordance with various modes, in regions close to one another. Its clearly discernible unity appears thereby the more remarkable. The zone of its origin was the great geographical domain extending from Burgundy to north-west Spain, and from Poitou to Provence, forming a strongly linked grouping around the Massif Central. From here, it came via Normandy to England (where, however, the ribbed vault soon made its appearance). It combined with Carolingian traditions in the Netherlands and Germany, with Byzantine formulas in Italy, with Islamic influence in Spain; it was reflected even in the Syria of the Crusades.

Romanesque Decoration. The effect produced by Romanesque decoration is at first sight very different from the appearance of extreme order and restraint which was characteristic of Romanesque architecture. The terrible majesty of God and the visions of the Apocalypse as they appear on the tympana; the strangeness of the monsters confronting and devouring each other on the shafts and capitals of the pillars; the distortion of the curiously elongated personages frenziedly gesticulating—all these disconcert us and transport us into an imaginary, terrifying world. These things can, of course, be traced to their inspirational sources. We must remember the Eastern origins of certain types of images, as well of men as of animals and plants, whose likenesses had been spread far and wide on ivories, textiles, and miniatures, and the effects of a primitive and violent period, when a piety which was continually being assailed, was obsessed with the foreboding of an approaching end of the world.

Distortion. Archaeologists have stressed, however, and with equal justification, the influence of the technical specifications with which this monumental sculpture had to comply. The decoration had to go in whatever inconvenient places the architectural design allotted to it, sometimes on tympana, sometimes on capitals. If it was to be portrayed there at all, the human figure had of necessity to be elongated, or contracted, or distorted. And yet Romanesque sculpture was carried out in obedience to a decorative logic of its own, based on simple geometrical combinations, in which all these elements found their place in a balanced scheme of grouping, which left none of the available surface exposed. Paradoxically, what this curious decoration simultaneously expresses and conceals is a seeking after order and harmony.

Paintings in Church. The Romanesque church also gave a considerable space to painting. Cleaning has enabled, and is still enabling, restitution to be made of many mural paintings, which have been preserved from deterioration by the distemper or the plaster they had been covered with. In theme and composition these had drawn profitably on the experience accumulated in, and also diffused by, the illumination of manuscripts. On the basis of colour-types, it has been possible to differentiate the major groups: one group coming from Burgundy and part of Auvergne, applied brilliant colour on a dark background; further west, in a series of workshops stretching from Languedoc to the Loire, matt colours on a light ground were the rule.

A 'Baroque' Period. The twelfth century, however, saw a gradual lessening of this timidity on the part of the decorator. An increasing profusion of decoration, comprising the unity of the architectural mass, together with a certain seeking after pictorial effects, gave evidence here and there that Romanesque art was entering on its 'baroque' period. These tendencies called forth a reaction, most strongly in the Cistercian churches. When St Bernard and others recommended ascetic simplicity in Christian churches, they did not only assert a moral principle; they also indicated their weariness in the face of

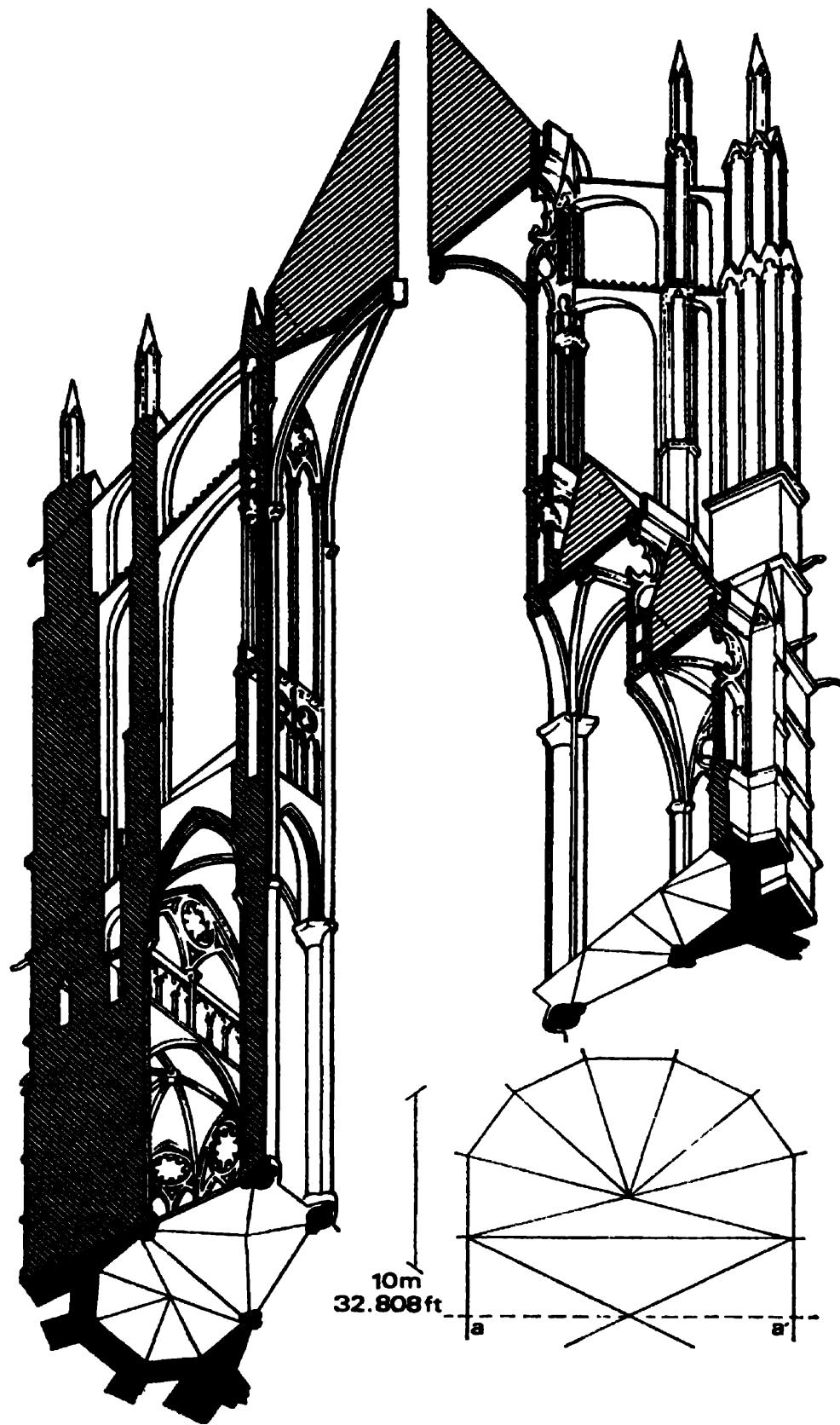


FIG. 27. Beauvais (after Auguste Choisy).

'this beauty deriving from distortion', as St Bernard so accurately described it. It found expression in prohibitions—against stone towers, against protruding side chapels, and against decorative excesses. With its first buildings (as at Fontenay), it brought about a reversion to austerity in Romanesque art, an elimination of 'whatever is still retained of pomp and oriental mystery'. (H. Focillon.) Not long after, however, the movement adopted the ribbed vault and the Gothic style, which it was strong enough to preserve in the full power of its restraint, and which it was triumphantly to diffuse throughout Europe.

E. Gothic Art

The history of Gothic art is, as we have already said, the story of the progressive evolution of a new architectural entity, the ribbed vault associated with the pointed arch. This had been used well before the eleventh century for the vaulting of buildings with a central plan, such as mausolea, crypts, and porches. The problem now was how to use it for elongated naves. The oldest extant example of a solution dates from somewhere about 1100 and is at Durham in England. Thence the formula spread rapidly, via Normandy, to the Ile-de-France, where it was to attain to its full development. It was fortunate that in Paris Romanesque art had not reached great heights, for such success might well have stood in the way of the adoption of Gothic. In the royal domain, however, it found a unified *milieu* that was also, with the expansion of the monarchy, to be an environment of singular 'dynamism'.

The Lightening of Walls. Here, then, in the twelfth century, rose the first masterpieces of Gothic architecture, and first among them St Denis, built under the direction of the abbot Suger, minister of Louis VII. (Pl. 49.) The use of the ribbed vault here made it possible already to let wide apertures in the walls, from which glowed the splendour of the stained-glass windows. But the proportion of the masses are still clearly those of the Romanesque art. (Fig. 28.) The superimposition of four storeys stressed horizontal lines—these four storeys being: the arcades between nave and aisle, the tribune gallery over the aisle, the triforium passageway in the thickness of the wall, and the upper windows. This character was retained in the cathedrals of Noyon and Laon, and in Notre-Dame in Paris, which is over one hundred feet high to the interior of the vault, and inaugurated the age of the huge building. It was at Chartres, in the last years of the century, that the flying buttress was used to develop the 'high gothic' formula, in which the tribune galleries were eliminated, the nave arcade and upper windows of almost equal dimensions were separated by the triforium passageway, and the whole structure produces that extraordinary impression of soaring, in united impulse, to the skies. (Figs 29, 30.) The lightening of the walls was subsequently carried to extreme limits, until the building conformed in increasing degree to the description of it as glass over a stone skeleton. Finally, along with the predominance of ascending lines and the lightening of the walls, the search for sheer size was

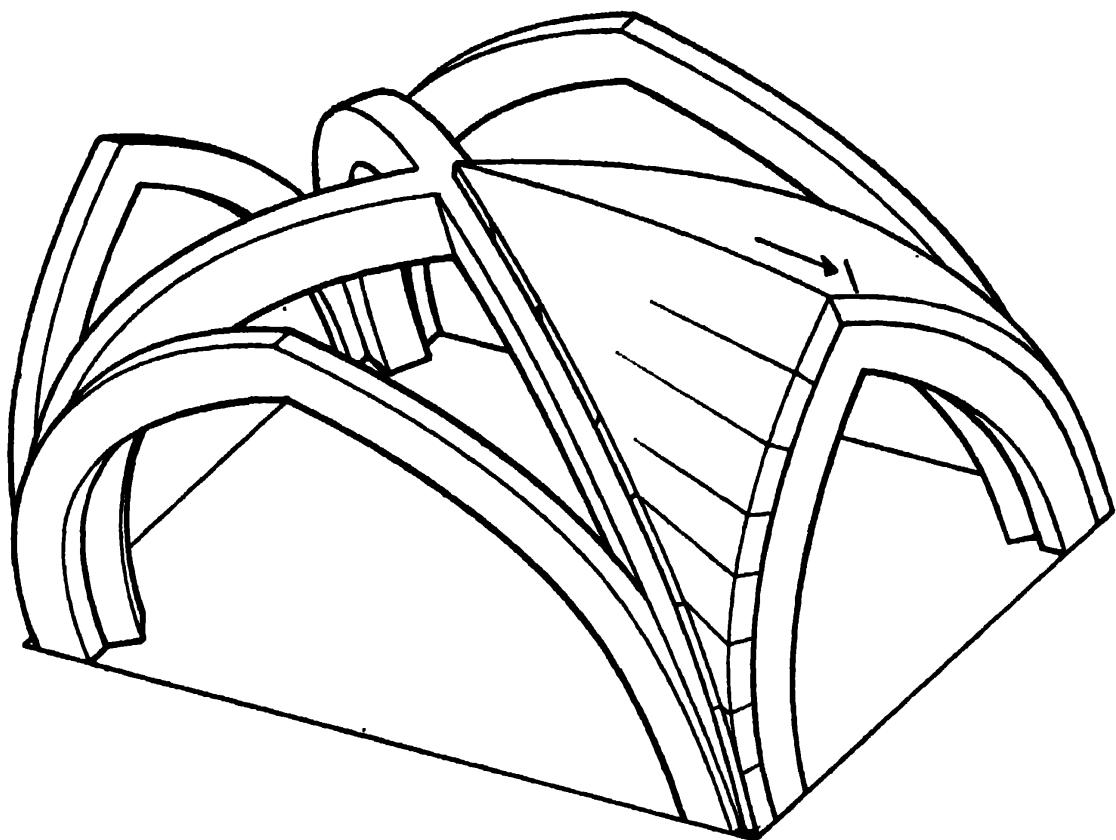


FIG. 28. Gothic ribbed vaulting (after Auguste Choisy).

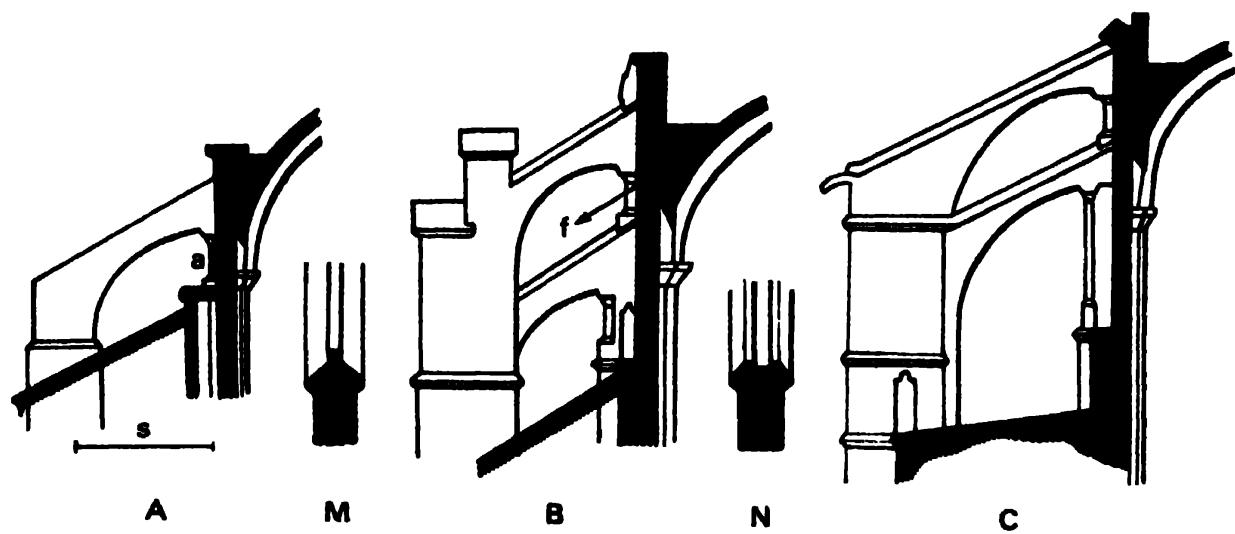


FIG. 29. Flying buttresses (after Auguste Choisy). A: single-arched buttress with sloping top; B and C two superimposed arches placed above and below the area of thrust.

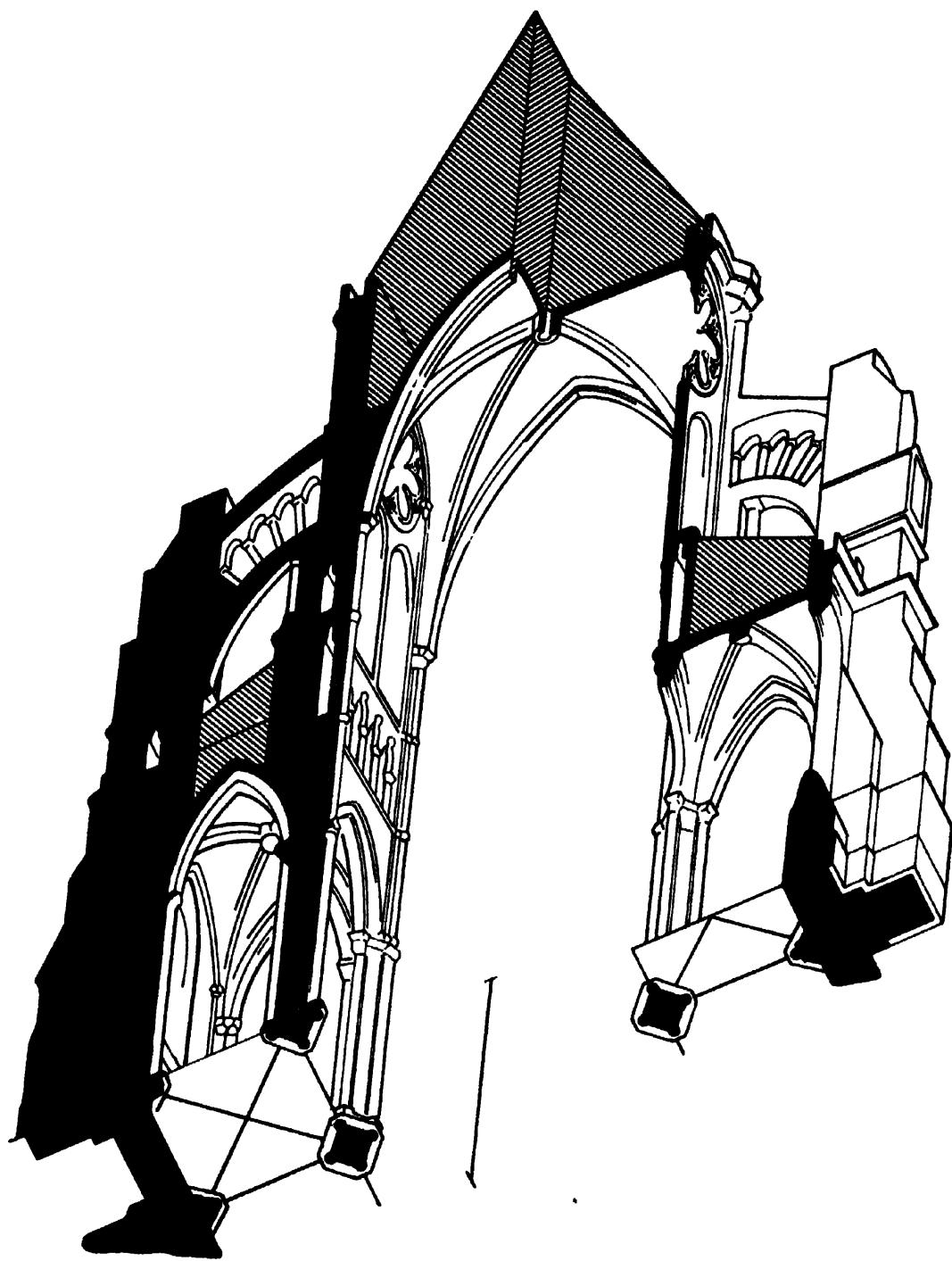


FIG. 30. Chartres, Eure-et-Loire, France (after Auguste Choisy).

increasingly pursued. The evolutionary process was forwarded by first one and then another of the great cathedrals of the thirteenth century—Reims, Amiens, Bourges. (Fig. 31.) In the second half of that century the culmination was reached with the 'rayonnant' (or 'radiating') style, and a tendency to a hardening of the formula. Beauvais, some 157 feet to the vaulting, was the supreme expression, an example of virtuosity carried to temerity: but the cross-tower crumbled, and the church never reached completion. (Pl. 50, Fig. 27.)

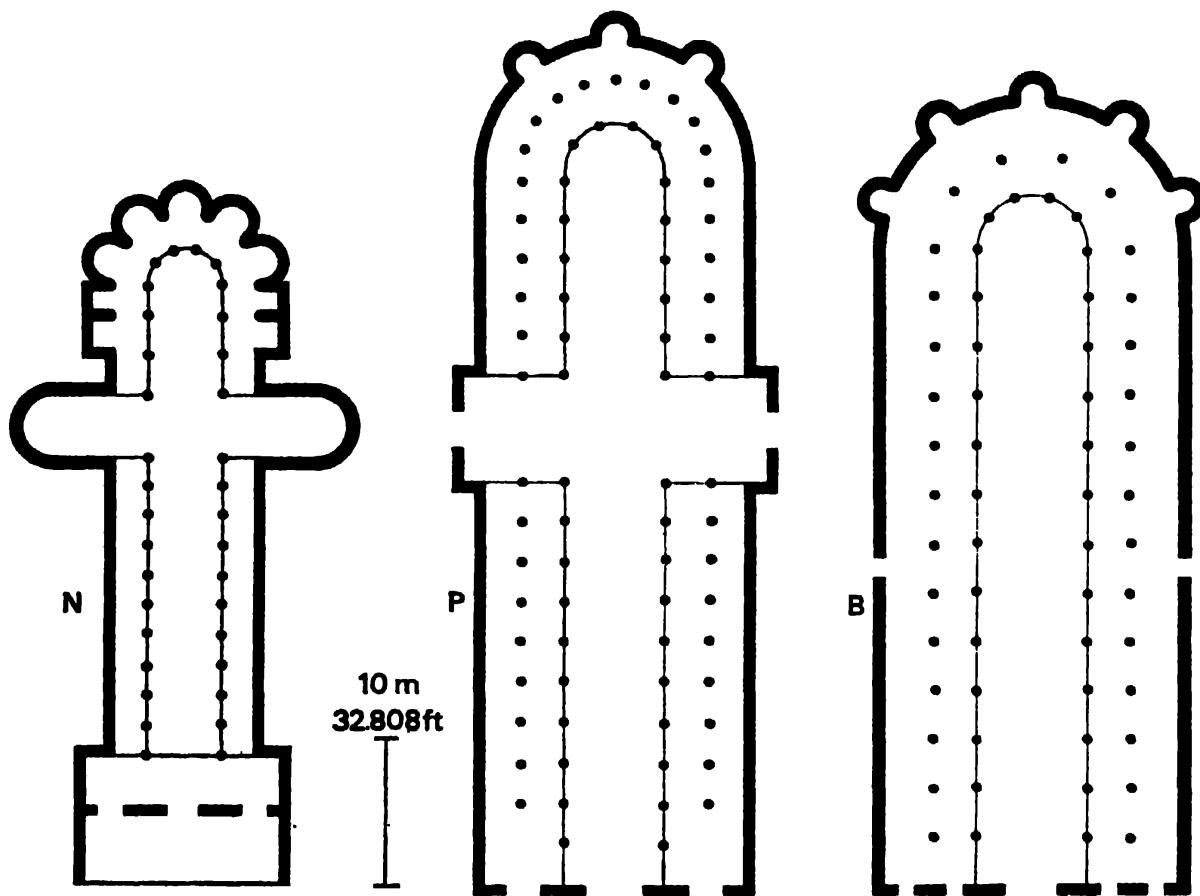


FIG. 31. The evolution of Gothic churches (after Auguste Choisy). N: Noyon; P: Notre-Dame; B: Bourges.

Gothic Art Spreads through Europe. At the same time, Gothic art was spreading throughout the greater part of Europe. Geographically, its progress is a useful record of the development of travel and trade; travel on the part of master craftsmen, in particular, explains the similarities between buildings as far apart as, for instance, Bourges and Toledo.³ On the other hand, the new style everywhere combined with regional tendencies which were already evident in Romanesque art. For instance, Normandy and Burgundy, which had been the scene of early experiments with the ribbed vault, easily took over the style which had this as its starting-point. Anjou developed especially the plastic

combinations of the vault. The English story was a curious one: the ribbed vault came into use very early, but Romanesque forms persisted for a long time. Neither ground-plan nor elevation were developed with the logical vigour that characterized their evolution in France, and the baroque forms of the 'curvilinear' (known as 'flamboyant' on the Continent) style made a very early appearance. Other areas were very conservative. In the Netherlands and Germany, architecture, though it took over the ribbed vault, held to the course on which it was already set; Cologne, however, changed sharply to the *rayonnant style*.

In southern France, Gothic, though not exactly imposed by the Albigensian crusade, has nevertheless an air of being something from outside, which new conditions served to foster. Construction in brick, the single nave, and the lesser importance attached to lighting, here imparted a distinctly individual character. In Spain, the progress of the *Reconquista*, the activity of Cluny and Cîteaux, and vast French immigration, explain the extensive penetration of an art which was Gothic in character, although far from being limited in its scope to imitating the work done in France. Islamic forms and techniques, which had already furnished the inspiration for Mozarabic art, persisted, and, from the end of the thirteenth century onwards, combined with ideas from Europe. Italy, which had a strong Byzantine tradition and, especially in Tuscany, an elegant and skilled genius of her own, was more resistant. Gothic in Italy remained an art of the religious orders, Cistercian and, later, Franciscan, and inspired no great masterpiece. This is the final proof (if one were needed) that the expansion of Gothic art from Portugal to Hungary and from Scandinavia to Cyprus was not a servile imitation, but a combination, in varying proportions, with what already existed locally.

Decoration Evolves. In this rapid evolution, architecture assigned a new place to decoration. Sculpture seemed at first to hold to the Romanesque tradition: the elongation of the figures in sculpted columns was a continuation of the compliance with the demands of the architectural frame; the theme of Christ glorified similarly comes from Romanesque iconography. But innovations were on the way. Among them, the theme of the Virgin was prominent. Another departure, doubtless due to Suger, was the portrayal around the doorway of the Forerunners, the prophets proclaiming Christ's coming. In all there was a concern for exactitude in the representation of the human form, albeit sculpture aimed at idealized forms rather than realistic portraiture. In the thirteenth century, this Gothic decoration finally realized itself as an art essentially of the measured and the natural, in which Christ and the Virgin come nearer to us. In it, man found himself once more in the universe that God had created. Nature, with its plants and familiar animals; science, in which the head and hand of man conspire; history, from the Creation to the Redemption and the Last Judgment; all are reflected here exactly as in the contemporary encyclopaedias.

In all this a new spirit was revealed. But it was the new relation between architecture and sculpture which nurtured it. Sculpture had established an authority of its own, which, while continuing its respect for its setting into a building, maintained also obedience to its own rules. The statues set by the doorways and on the higher parts of the building retained, in their proportions and modelling, a monumental quality; slight corrections were made to obviate perspective effects; and the capital, no longer intended to arrest the eye but to conform with the general ascending line, henceforth received only leaf-pattern decoration. The point of equilibrium had been attained at which the newly found dignity of sculpture as yet brought no disruption into the deep-sprung harmony.

Stained Glass and Frescoes. The effect of the new architectural developments on painting was more pronounced. The widening of the wall apertures encouraged a great development of the art of stained glass. The windows now became a veritable world of their own of luminous imagery: in shades of red and blue predominantly, to which the Cistercians introduced grey-toned backgrounds that were later, in the last years of the thirteenth century, adopted universally. The scope of mural painting, on the other hand, was considerably diminished. It persisted, but only in areas where the logic of Gothic never succeeded in imposing itself, in the south of France, for example, and, especially in Italy. Here, in fact, the greatest fulfilment of the Italian genius appeared, parallel with the triumph of the *Divine Comedy*. Or rather, one should say, of the Italian geniuses: the Roman, as seen in the frescoes of Cavallini, which were expressive of a tranquil majesty, a note destined to be dominant in the awakening pontifical art; and the Tuscan, whose Byzantinism was indicative less of conservatism than of a deep-rooted natural tendency. The early masters of Tuscan art were Cimabue in Florence and Duccio in Siena; both used gold for their backgrounds, attained at a seemingly effortless elegance, and displayed great control in the expression of intense emotion. There was also the popular genius, more generally diffused and fanned by Franciscan fervour: a mysticism that drew part of its inspiration from the marvelling contemplation of the Creation and had as its natural result the representation of it in the churches. The followers of St Francis also never tired of commemorating there scenes from the exemplary life of their founder. Pre-eminent among these is Giotto, whose greatness lies in the harmonious strength of the framework in which he set his scenes, the majestic nobility with which he endows the persons enacting them, and the power of his arrangement of them in cycles.⁴

In France, meanwhile, painting was not dead. There the art of the miniature, in particular, underwent notable development: still almost architectural in its arcaded framework and the general nature of its composition, it now foreshadowed the rise of the painted picture, by its enrichment of theme and colour combination.

F. Music

Another of the arts, music, claims our attention here by reason of its creative originality and the notable future it proved to have in store. 'Western' music had to set out again almost from zero, in what was probably a fortunate discarding of memories from the past. However great the virtues of 'Gregorian' plainsong, that rich collection of religious chants that pope Gregory the Great had assembled, codified and diffused,⁵ and however spontaneous and often charming we may find (in so far as we have been able to reconstitute them) the melodies which formed the accompaniment to poetic declamation and only gradually attained to an existence in their own right, the most novel and significant developments were in polyphonic music, that is, music in which several melodies are simultaneously combined. The first examples of polyphonic music date from the end of the ninth century in the work of the monk Hucbald of Saint-Amand, near Tournai. Here we find the earliest extant example of the *organum* for two voices: the *vox principalis* which takes the melody, and the *vox organalis* which, beginning on the same note, holds this until the voices are a fourth apart from each other, and then follows the *vox principalis*, finally reverting in similar fashion to unison. A new step was taken at the end of the eleventh century with the 'descant', using two voices, one ascending, the other descending, and according greater freedom to the composer. But this was still more antiphonal than really polyphonic.

The Motet. Development received at this point an additional impetus from acquaintance with what had been done by the Arabs with 'measured' music, in which, thanks to the invention of the bow which permitted the production of strictly measured sounds, the notes stood to each other in completely stable relationships of duration. From the end of the twelfth century, polyphony was developed in several forms. Henceforth, in the *organum*, very free vocalization would be given to the *vox organalis* on each prolonged note of the *vox principalis*; a principle on which, around 1200, Léonin and Perotin composed some fine works for three or four voices, both masters in this school of Notre-Dame in Paris, where musical initiative was paralleling the development of Gothic architecture. The motet was a variation of the *organum*: a text (*motetum*) would be adapted to free vocalizations, and long notes broken, divided into regular rhythmic groups interspersed by rests, and often given to instruments. In the thirteenth century, the motet passed into secular currency and was extremely popular at festivals. Finally, there was no longer any tenor in the *conductus*, several soloists now singing together, and more freely, different melodies.

Rhythm. Rhythm thus took on a new musical importance. Ternary rhythms predominated at first, mystical mediations on the number 3, conferring on them a peculiar value. The first rhythmic mode consists of a 'long' (equivalent to two 'breves') and a 'breve'; another, the second mode, of a 'breve' and a 'long'. The search after variety in the thirteenth century led to the use of these rhythmic modes in conjunction with each other and with binary rhythms.

Notation. The problem arose of notation of these notes and their duration. The solution was found, almost certainly in the ninth century, in the use of neums, signs which were similar to grave and acute accents, and indicated the rise and fall of the voice. The system was gradually improved on: the neums were no longer placed in a line but at different heights indicative of the intervals between the notes; polyphony gave rise to the use of lines (precursors of the modern stave); and finally, in the thirteenth century, we find mensural notation, the neums taking on different shapes (square, rectangle, and diamond) according to the value of the notes, and symbols devised to indicate rests. From such experimentation, progress in which was swift, emerged the modern system of musical notation. (Pl. 51.)

N O T E S

1. The Roman basilica, however, was not a religious building but a public meeting hall; its plan resembled that of the Christian basilica, but not closely enough to be regarded as a direct ancestor of it. Still it is significant that the Christians discarded the plan of the pagan temple, which was the dwelling of the god, and adopted a plan that would enable the faithful to meet inside. (R. Lopez.)
2. All of these characteristics are also noticeable in Western iconography of the early middle ages, although the human figure is less frequently represented and the execution varies according to the technical skill of the artist, his dependence on local traditions, and his accessibility to Byzantine influence. Irish art, for instance, was no less abstract and dream-like than Byzantine art, but it developed a highly original style by absorbing Byzantine themes and reinterpreting them freely, according to native tradition. (R. Lopez.)
3. In turn, according to some scholars, the whole development of Romanesque and Gothic architecture may have been connected with another kind of travel and trade; the pointed arch, for instance, appeared in Iran and in Spain long before its adoption in Christian churches and one may postulate a transmission through pilgrimage and commercial intercourse. This hypothesis, however, has so far failed to convince the majority of art historians, although some influence is not absolutely to be excluded. (R. Lopez.)
4. It is doubtful that the novelty of Duccio, and especially, Giotto (who, in turn, had forerunners such as Coppo di Marcovaldo and Cimabue), can be fully conveyed by the generic praise given them here. A first remarkable difference is that stained (or, more exactly, 'painted') glass did not easily lend itself to close representation of facial expressions and of volume; it was almost as flat as mosaic; with Duccio and, especially, Giotto, realistic emotion and the play of masses come of age. Moreover, these painters, and their successors (for instance, Simone Martini) introduced into art the representation of everyday life and of urban pride, not merely as a background of religious themes (as in Gothic sculpture), but often as the main theme of painting. Actually the development of painting in Italy, through the Florentine and Sienese schools, is largely beyond the chronological scope of this chapter. (R. Lopez). See Louis Gottschalk, *History of the Cultural and Scientific Development of Mankind*, Vol. IV, *The Foundations of the Modern World, 1300-1775* (London and New York, 1968), Ch. XII, 'The Visual Arts and Music, 1300-1775'.
5. In it, we might find an example of parallel development with that of Byzantine music.

PART THREE

AFRICA, THE AMERICAS
AND OCEANIA

CHAPTER XV

THE PREHISTORY OF AFRICA

I. AFRICAN HISTORIOGRAPHY

LIKE any other continent, Africa has a history. But this history still remains difficult for our techniques to decipher when we try to go back earlier than the thirteenth century A.D.

After a prehistory whose exceptional importance is nowadays universally recognized, our knowledge of this immense continent—with the exception of a few points—is obscure from the end of the Neolithic Age until the seventh century A.D. During this long period, there was an awakening of the fringe of Africa in contact with the Mediterranean and the Red Sea. But though Africa discovered in itself, as in the Nile Valley, the resources of an advance towards a higher stage of civilization, what was known about the continent even at that time was through observation from outside by people of other lands, who in some cases colonized it.

South of the Sahara, beyond Bahr el Ghazal and Ethiopia, everything concerning these early centuries is difficult to elucidate. Though the remarkable Nok culture today clearly poses the problem of African origins in the forest zone, and though the investigation of the spread of metal-working opened up unforeseen perspectives a few decades ago, these are still only isolated glimmers of enlightenment, they are difficult to fit in to the chronological pattern, and their origins are difficult to situate.

Agricultural historians tell us that there were two major and ancient sources of agricultural life in Africa apart from the Mediterranean and Nilotic regions. One of them was Ethiopia, from where techniques and plants spread in the direction of the Indian Ocean. The other was the Middle Niger, where from the third century B.C. onwards plant selection was introduced, and native rice was cultivated at a very early date. How can we fail to relate these soundly established facts with the existence of the kingdom of Gao, famed in ancient times, referred to by Arab authors from the eleventh century onwards? Neither can we fail to relate what we know of the existence of a Senegambian agricultural community from about 1500 B.C. onwards, with the existence of the civilizations of the Senegal River of which Bakri and Idrisi provide a glimpse. Although these correlations are suggestive, they prove nothing in the present state of our knowledge. But they open up quite extraordinary historical perspectives. If we agree with the indications of M. Portères, we get the impression that this West African cereal steppic agriculture which originated on the southern fringes of the Sahara was perhaps partially responsible for the deforestation of the Sahel, and consequently for the increasing extent to

which these zones became a desert, leading in turn to the withdrawal of settled (i.e. non-nomadic) black farmers towards the south. Here we have fruitful perspectives, even if they are merely working hypotheses, for the historian.

From the seventh century onwards, under conditions which it is necessary to emphasize, we have information which is apparently more satisfactory. But it still concerns only the steppic zones of Africa located north of the Equator. The forest zone is almost totally excluded, as is the south.

And yet here again details appear at various points which lead us to put the question: Were these regions, of which we know nothing today, uninhabited? Were they unproductive of civilizations? The remarkable discoveries made around Lake Kisale, north of Katanga, dating from the eighth and ninth centuries A.D., lead us to put the question: Do not the Christian or Arab sources on which we have so exclusively relied up to the present tell us about an insufficient portion of the continent; a somewhat larger portion than in antiquity, but one which leaves a good half of Africa entirely in the dark? To put this question is to reveal the inadequacy of our knowledge of the medieval past of Africa, which up to now we have considered as fairly sound.

Without making a critical examination here of the view of Africa and the Africans taken by writers of antiquity, it is worth pausing for a moment to refer to those who left us accounts of the Dark Continent between the end of the Roman world and the tenth century. For their explanations, which reveal a cultural self-centredness which has so far received little attention, totally falsify the real perspectives of the ancient and early medieval history of Africa.

Christian thought, besides inheriting Roman culture, also inherited the Jewish tradition. The latter initially led the fathers who interpreted the Bible to a veritable mythification of African history, of which more than a trace remains today. Peopled by the descendants of Ham who came from the Middle East and who migrated in waves westwards and southwards from the north-east of the continent, Africa—according to these early interpretations—belongs to the mythical cradle of humanity and necessarily owes its civilization, as well as its peopling, to that womb of all human culture: the Near East. African prehistory alone gives the lie to this tradition. In more than one memory which unconsciously received its imprint, it left—after centuries of secular culture—an intense reflex of deformation which made it impossible to admit the plurality of origins of cultural awakening in Africa and the equality—in comparable historical situations—of white civilizations and black civilizations.

The black African, the Ethiopian of ancient Christian sources, suffered the same depreciation. For a long time he was frequently and readily identified with the sinner, on account of a symbolism of colours specific to the Mediterranean world. Gregory the Great, dealing with the responsibility of the sinner for his sins, made use of an image which seems to have been popular in his time: the owner of a bath is not responsible for the fact that the Ethiopian, who was black when he went into it, is still black when he comes out (letter to

Domitian, August 593). A substantial part of ancient and medieval tradition connects the curse of Ham with a pejorative representation of the Negro. We shall have occasion to come back to this.

Another religious vision of African history, another deformation; a mythology of another type—going beyond the Middle Eastern origins of the peopling of Africa—concerns the place of the Jews in the ancient and medieval history of North Africa, south of the Sahara and in Ethiopia. According to a series of totally unfounded hypotheses, the Peuls were descended from the Jews; excessive emphasis has been laid, through the story of the Queen of Sheba, on the semitization of Ethiopia. According to these same hypotheses, the oases of North Africa were peopled by Jewish refugees fleeing from the Roman persecutions, and Jewish blacksmiths were credited with the introduction of iron metallurgy in East Africa. Charles Monteil has very rightly drawn attention to the exaggerated and unproven nature of these contentions.

But there is a real and important problem to be examined in this field. Many years before Christ, the Judaized Kushites lived in the region of Gondar, in Ethiopia; they probably came from Arabia. On the fringe of the Byzantine Empire in the sixth century there was an afflux of dissidents of all kinds, Jews and Christians, who enriched with their science in some cases, and with their quarrels in all cases, the peoples among whom they found refuge. At this time the Khazar chiefs of the Lower Volga were being converted to Judaism, for reasons which remain mysterious. The Jewish communities of Arabia were very active; spectacular conversions led to the balance being upset in some cases. For instance, in 524 a converted Himyarite king massacred part of the Christians living in the textile manufacturing centre of Nedjran and conquered the Yemen, thereby provoking a reprisal expedition on the part of the Ethiopians.

Did not the same activity of Jewish communities exist in North Africa, around Tunisia, which had been reconquered by the Byzantines? Did not a wave of proselytism develop then among the Berbers, some two centuries before the widespread establishment of Islam? Do we not see here the origin of the deformations to which declining Christianity and rising Islam in the western Maghreb were subjected? The origin of the wave of conversions to Judaism referred to by Charles Monteil? In any case, it is a phenomenon which occurred too late to explain the origin of the Peuls and the spread of iron metallurgy. Less serious perhaps, because more partial than in the case of Christianity, the historical mythology concerning the rôle of the Jews in Africa none the less masks some extremely interesting problems.

Islam was not exempt either from deforming tendencies—perfectly unintentional moreover—as in the cases already quoted.

All men seek their ancestors in their own real or supposed cultural line of descent. This was just as true of the French aristocrats of the eighteenth century harking back to the Crusades to justify their nobility, as of the Franks in the early Middle Ages who sought a link with the Trojans. The Axumites

quite simply transferred Mary, Joseph and Christ on to their own territory. The Virgin consecrated Axum a holy city. The African Moslems did not escape this craze. In accordance with a socio-legal fiction dating from the early days of Islam, they sought kinship with Arab ancestors as closely related as possible to Mohammed; along lines other than those followed by Christians or Jews, they were also led to look for the origins of Africa in the East.

Without doubt, the western Maghreb, Nubian Africa and Ethiopia, really were zones of refuge for various sorts of persecuted people under the Byzantines and subsequently under the Moslems. From this point of view, we are today familiar with the history of the Idrissids in Morocco and that of the Rustamids in Tahert.

Explanations of the same kind are more difficult to accept in the case of the regions of Africa situated south of the Sahara where nevertheless they abound according to quite recent sources. For instance, eleventh- and twelfth-century sources claim that Ghana received Shi'ite refugees, followed by Ummayad warriors from Ifriqiya. In the first case, referred to in a twelfth-century text, the identification of these refugees with the Cali family through Husain is suspect; the Shi'ite referred to were probably a minority group isolated in Ghana who were trying to find a reassuring origin. In the second case, we can see an intense effort—conscious or not—on the part of Bakri to establish the legitimacy of the claims of the Ummayad hegemony to West Africa. Though, thanks to T. Lewicki, we know that there indeed existed Shi'ite groups at a very early date south of the Sahara—which may pose the problem of the relationships between Idrissid movements and Sahelian Africa in interesting terms—no trace has been discovered of non-nomadic warriors south of the Sahara, preserved (*dixit* Bakri) from any cross-breeding by a strict endogamy.

Tchad and the southern regions of the Nilotic valleys have not escaped explanations of this kind. White refugees are supposed to have brought civilization to this area long before it was penetrated by Islam. In the extreme case, it is claimed that these refugees were white Berbers who founded Gao and Ghana.

This line of reasoning is suspect. It has been followed up uncritically by western historiographers, despite the fact that it leads to a conclusion which is contradicted by everything: no organized civilization could have existed in black Africa before the whites from Rome, Byzantium or the Moslem world sowed its seeds.

From the fifteenth century onwards, it was the black Moslems above all who insisted on the Moslem origins of the most brilliant black civilizations. These black Africans who had become Moslems identified themselves with the whites who had brought civilization, at the same time as they sought kinship with families close to Mohammed.

This reflex, which was born of total assimilation with the world of the converters, had serious consequences. It prevented any attempts to seek a

specifically African genesis of political groups and technical discoveries. Seen from this angle, black Africa was no more than the tardy and attenuated expression of the civilizations which had very slowly penetrated it, and consequently the continent was condemned to be no more than the raw material of history whose past existed only in function of others.

Many other alienations were added to those we have referred to. A vocabulary borrowed from European history has been tacked on to the African past in order to reduce it to familiar patterns: empire, kingdom, sovereign, vassals. The real adaptation of these terms to the African situations which they are supposed to explain has never been seriously examined; moreover, they carry in themselves a weight of prestige or judgment which confers a semi-sacred character on them. Yet they really explain nothing at all of the historical processes specific to Africa.

In the eighteenth century it was admitted that Africa was all the more fascinating in that it represented a sort of zero degree of civilization. The nineteenth century, less optimistic, considered this continent which was silent on its own past to be inferior to any other for all time, in the perspective of history. Many technicians of history, even today, go so far as to believe that Africa has not and will never have a history, since it does not possess written documents like those which have served to elucidate the past of the white world.

So many ethnocentric views have rightly led to a veritable insurrection on the part of African intellectuals, weary of the unjust alienations to which their past has been subjected. This was a healthy reaction, even in its most extreme forms, and it has opened new perspectives.

Of course, as Basil Davidson has already remarked, any civilization deprived of its past mythifies the latter and invents heroes for itself, failing a knowledge of any real ones. Giant ancestors are not exclusive to any continent; we find them wherever historical investigation has not yet developed its effects.

But since, as innumerable indications prove, Africa has a history to be rediscovered, before tackling this task we should not be fooled by hereditary or cultural reflexes which have deformed the image of Africa's past and deviated the paths which lead to it, at various times and for various reasons, since antiquity.

Natural conditions also have a share of responsibility in the imbalance of our knowledge of the various regions of Africa.

Climatic transformations were doubtless comparable in the east and in the west of the continent, but their consequences were not identical after the fourth century. In the east, the Nile remained a remarkable line of penetration and a zone where populations and cultures intermingled more or less rapidly. Even though the successive dominations of Rome, Byzantium and Islam in Lower Egypt encountered strong resistance to their attempts at penetration towards the south, exchanges remained considerable at least until the eighth century; and they recommenced after the Fatimids settled in Egypt. From

every point of view, racial intermingling occurred along the Nilotic valleys.

In this connection a tremendous amount remains to be done in order to know the ancient and medieval history of the upper valleys of the Nile, as well as of Bahr el Ghazal and Darfour, where the keys to more than one problem of continental history may be expected to lie.

In the west, the situation was quite different. The Atlas Mountains and the Sahara became a greater barrier as life left the great desert, which was extending in area. Here fragmentation and cultural isolation were the rule. At all latitudes, the far west of Africa was a long way behind the east. Apart from a few communications routes (our knowledge of which is still insufficient), but one of which is thought to have run westwards from the Upper Nile across the south of the desert, the Sahel did not have any intense contact with the outside world before the tenth century.

We know little of how the southern fringes of the Sahara dried up; this would probably provide more than one historical explanation. Reference is frequently made to the slow withdrawal of the Negroes southwards from the Tagant, Adrar and Hodh, but its forms and its causes have not yet been clearly studied. However, the work of S. Daveau-Ribeiro and Ch. Toupet has proved the existence of settled farmers in regions of Mauritania which are today abandoned. Our excavations at Tegdaoust have revealed a spectacular lowering of the water table in medieval times, the exact causes of which still escape us. What rôle did such phenomena play in the history of the isolation of West Africa? How could Sonni Ali have reasonably envisaged digging a canal between Oualata and the Niger in the fifteenth century unless he was totally out of touch with reality, or unless natural conditions at that time still justified such a project? If we apply our own geographical observations to the texts we are studying, we risk being drawn into error.

The sea played the same discriminating rôle between west and east. R. Mauny has proved, apparently irrefutably, that in the west ships could not reach the coasts of black Africa so long as certain technical conditions were not fulfilled, and this was not the case until after the fourteenth century. The meridian lines of communication were therefore necessarily Saharan.

In the east, the sea provided a link between different parts of Africa and connected them with other continents. On the Red Sea, the Egyptian fleet which sailed from the port of Adoulis played an important rôle in intercontinental exchanges until the seventeenth century. The influences of Ethiopia on the Arabian Peninsula, and vice-versa, are relatively well known to us. On the eastern coast, without going back to the origins, navigation attained considerable proportions, especially between the seventh and tenth centuries, thanks to the Iranians. The history of the Islamization of the coast, of trading stations, and of trade with Asia relates more to the Moslem and Asiatic worlds; but these facts were obviously not without repercussions on the interior of the continent.

As an intercontinental link, the monsoon in the Indian Ocean played a rôle

which was the reverse of that played by the Trade Winds in the west; and this had its effect on Africa.

Thus many factors combined to favour knowledge of the east, and to make knowledge of the west difficult. The history of Africa, or perhaps simply what we already know of this history, remained marked by this fact for a long time.

But this situation can be remedied. Relatively simple investigations can throw light on more than one point of this obscure past. A monetary geography of medieval Africa, though it confirmed the time lag between the east and the west of the continent, could also reveal unexpected relationships and interesting preoccupations. As early as the seventh century, Axumite Ethiopia and the Nubian regions used currency which was subsequently and successively related to powerful rival monetary systems. Coinage came late to the Maghrebian west, at least when it was Islamized; Ifriqiya did not mint gold coins with any regularity until the second half of the ninth century.

Other regions of Africa which produced gold locally did not use it to mint coins. They preferred other metals, like iron or copper—bars and crosses of which probably played an important rôle, but one which escapes us. There are other signs too, like seashells from the Indian Ocean (how did they get there? a geography of cowries of archaeological origin would tell us a great deal about the medieval communications routes and their dates); fabrics, and salt.

Having taken these preliminary precautions, what balance-sheet can we draw up today on the cultural and technical evolution of Africa in the centuries which we call medieval?

We can look at this question in three ways. How was Africa present in the outside world at that time? What do we know of Africa's own civilizations between the seventh and fourteenth centuries? By what methods is our knowledge of Africa's past likely to advance substantially?

2. THE PRESENCE OF AFRICA IN THE WORLD DURING THE MIDDLE AGES

In many and varied forms and at very different real or imaginary levels, Africa was remarkably present in the civilizations which surrounded it or which in some cases were installed on its own soil.

A. The Image of Africa and the Africans .

Theoretically foreign to Africa itself, this image, which was consciously or unconsciously totally incorporated in other civilizations, is none the less a fact of major importance.

Byzantines, Moslems or Westerners took their view of the world and the place which Africa occupied in it from a few sources which dismissed any other tradition. Hipparchus, Marin of Tyre, and Ptolemy left the medieval centuries restrictive affirmations. To symbolic speculation were added further

obscurities. Cosmas Indicopleustes claimed that the known and only knowable surface of the earth was in the shape of a tabernacle. For Western Christians, brought up on St Matthew, the earth, dominated by the Cross, should comprise four regions, whereas only three continents were known. Moslems believed the earth to be in the shape of an Iranian taylasan.

For the entire cultural tradition stemming from antiquity, the Nile poses difficult problems. Identified by Biblical exegesis with the Geon which flowed out of Paradise, the course of the river, which originated in the east, was somewhat confused with the courses of the Ganges and the Indus. Some Moslem geographers took up this theme. Dion Cassius was doubtless responsible for another legend: for a long time Arab geographers perpetuated the belief that an arm of the Nile came from the west. We may wonder whether the memory of the former drainage of the Bahr el Ghazal served as an ancient substantiation for this legend.

The Moslems, who were better explorers, and better placed to be so than the Christians, gained an increasing knowledge of the northern area of the Indian Ocean and southern Asia, especially between the eleventh and the thirteenth centuries. They discarded some of the myths to which Christians still held, but their geography, like their cosmography, remained cluttered with deforming memories.

Africa was particularly affected by these deformations. Almost all the Eastern and Western medieval geographers believed that Africa extended over more or less 200° of longitude, from the Islands of the Blessed in the west as far as the south of Asia, transforming the Indian Ocean into another Mediterranean. The celebrated map of Idrisi (twelfth century) sums up the knowledge gathered by the author on this point. To the South, massive Africa prevented any attempt to reach the other hemisphere (whose existence was suspected by Christians and Moslems by reasoning) except via the dangerous surrounding ocean which encircled the world's land masses.

The geographers who followed Ptolemy and who were nourished on an Adab eclectic incorporating the heritage of India and Iran as well as that of Greece, never clearly rectified these views until the end of the Middle Ages.

Travellers themselves observed other phenomena, but without linking them with Adab tradition.

Thus every cultivated Western or Oriental man in the Middle Ages accepted the fact, by and large, that Africa extended along the parallels as far as India or China. Along this interminable coastline were peoples and countries with which Islam slowly became familiar, from the 'Barbarians' of what is now Somalia to the Zang, who were spread over an immense territory and were suppliers of gold.

To the south, there was a great deal of uncertainty. Neither the real dimensions nor the shape of the continent were known. Tropical Africa was seen as the limit of any possibility of normal life; the sun changed the colour of the skin, gave rise to monsters, and caused gold to grow.

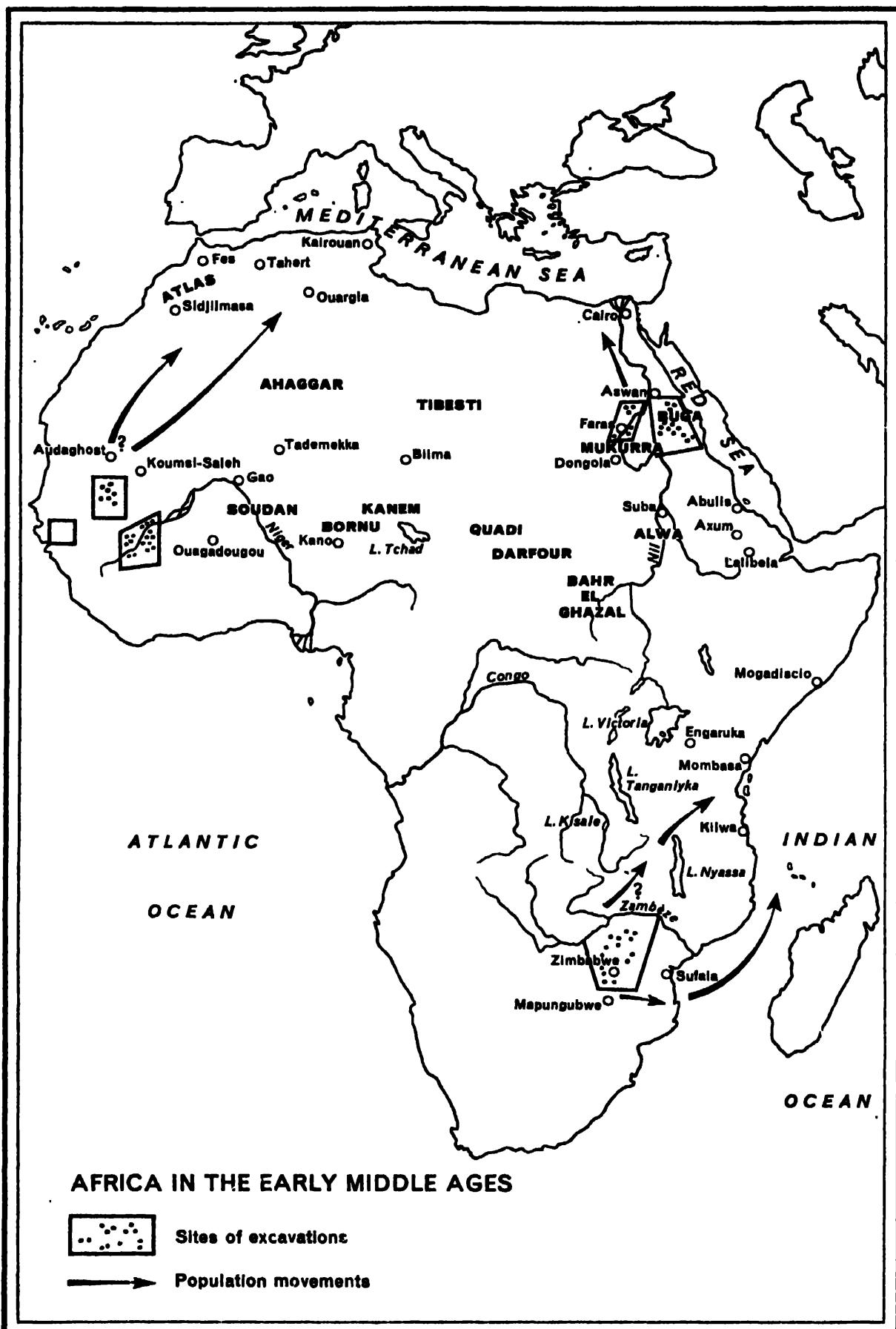
Beyond, all was mystery: the anti-earth or antichthon, with which no communication was conceivable and where according to Christian belief no man lived—otherwise it would be necessary to believe in the creation of two Adams! From this region flowed a mysterious river: the Nile. Like the world itself, Africa had its mythical limits which were perilous for ordinary men but which drew heroes who were able to overcome their fear. Like the hyperborean areas of the north, like the land of God and Magog and Paradise in the east, the regions south of the Sahel, the Upper Nile, and the parts of the east coast which were gradually discovered were, in Africa, dangerous places where myths abounded. Navigators who ventured too far eastwards to the limit of this Africa encountered the dangerous island of Wag Owog where the trees talked and bore marvellous creatures who came to the door of anyone who listened to them. No medieval civilization escaped these mirabilia, alone able to explain the secrets of a world that was not yet finished and to justify man's slowness in discovering it.

In the fourteenth century, the West ultimately situated the prodigious kingdom of the distinguished Prester John within these limiting zones, a reassuring image of the protective and vengeful father after the discomfiture of the Franks in the Holy Land and the Nile Delta. A manuscript opportunely discovered at Damietta by the Crusaders predicted the fall of Mecca to the Christians of Nubia and Ethiopia! In the thirteenth century, Ethiopia and the West reassured themselves at the same time and in comparable terms by a triumphalist literature, while Islam advanced in the Nile Valley and in the Sahel. Ethiopian Africa was the only hope for Christianity, which had been eliminated from the areas which it had conquered and was disappointed by the indifferent behaviour of the Mongols. The image of Africa changed for Westerners. Beyond North African Islam reigned powerful Moslem and Christian princes: the king of gold (*Rex Melli*) and the descendant of Solomon. The attraction of the former lay in the riches he possessed, and that of the latter in the invincible power with which he was credited.

From the tenth century onwards, Europe extended as far as the Arctic Circle; Asia was known in the fourteenth century; but Africa was not known in its entirety before the nineteenth century.

Such a continent, direct knowledge of which was extremely superficial, naturally contained dangerous peoples and monsters. The legacy of Herodotus and Pliny is seen in Arab texts, just as in Latin texts. Vézelay, Romanesque sculpture and illuminated manuscripts reflected this in the West, through the antique images of the world collected by the 'scholars' of the twelfth and thirteenth centuries. (Pls. 52, 53.)

Though it is difficult to know how the Moslems, who left us practically no iconographic records, saw Africans, Western art reveals the ambiguity of the place occupied by Africans in the consciousness of Christians. The tympanum at Vézelay expresses at one and the same time the disquiet caused by these foreign peoples and the question which arose in Christian thought: were they



MAP XXIV

excluded from the economy of Redemption? A mosaic dating from the early thirteenth century answered this question: the Negro, formerly identified with sin and frequently represented as an executioner, was henceforward seen as a captive who had to be liberated from his masters; he was destined for salvation. This was a major change in the Western attitude to the subject. It opened the door to the rehabilitation of the Negro, which had proceeded especially in Germany since the twelfth century, mainly in the form of depicting one of the Magi as a black man; this had not been previously done. There then arose the ambiguous concept of the duty of bringing a double salvation to the blacks, by liberating them from the Moslems and converting them to Christianity. After the fourteenth century, the missionary spirit was indissolubly merged with the spirit of discovery, with commercial enterprises, and the crusading spirit; the black African crystallized these tendencies.

We should not forget these motivating images in attempting to assess the historical value of the records left us by Westerners and Moslems who wrote about Africa at that time.

B. Lines of Communication between Africa and Neighbouring Civilizations

Until the tenth century, communications routes—especially in the west of the continent—were few, and were used only intermittently. But from the tenth century onwards these routes became more numerous, following the meridians and in many cases replacing former routes from east to west. This transformation had a profound effect on the life of Africa. (Map XXIV.)

Opinions are divided on the subject of routes prior to the seventh century, and we shall not enter into the discussion here. It may simply be remarked that it seems hardly conceivable that major continental lines of communication did not exist, especially along the parallels, from prehistoric times, and that they subsequently disappeared.

Similarly there must have been local routes, for instance the probably very ancient route along which salt from Aülil was taken to the Niger and Senegal; Cosmas Indicopleustes explains that the Axumites exchanged salt and iron for gold with the Negroes who surrounded their kingdom. A great deal of work remains to be done to throw light on ancient trading practices in Africa, in which the traffic in salt held a front-ranking place. A. J. Arkell considers, probably rightly, that the Nubian kingdom's exercised a powerful influence—especially in the early Middle Ages—as far away as the north of what is now Nigeria, via Tibesti and Darfour. Archaeology provides some interesting pointers in connection with this contention, but here again the essential facts remain to be discovered.

To confine ourselves to dependable facts, we may consider that of all the civilizations which followed one another on the northern fringe of Africa, only Islam made any serious penetration in the direction of West Africa.

The work of T. Lewicki and our own archaeological research in Mauritania lead us to somewhat different conclusions to those of R. Mauny, for example.

The Ibadite kingdom of Tahert attempted to establish relations with Gao and the bend of the Niger in the late eighth and early ninth centuries. Apart from the foundation of Sidjilmasa in the mid-eighth century by camel drivers accustomed to Saharan pasturelands, this was the first certain sign of any desire on the part of people living on the northern edge of the Sahara to communicate with the southern edge. We believe that too hasty an interpretation has been placed on Al Hakam's allusions to the raid in 734, and to allusions regarding the digging of wells in the eighth century 'along a western route leading to the Negro world'. None of these wells was far enough south for the explanation which has often been put forward to be considered valid. In any case, there exist very few dependable archaeological traces of trade between the north and south of the Sahara prior to the ninth century.

The south of Tunisia and the west of the Maghreb, occupied by religious dissidents (Sicites and Ibadites) had the monopoly of relationships with the South for at least a century. Doubtless this fact was not without consequences on the Islamization of the Sahel.

Two major routes, still irregularly frequented, connected North Africa with the zone south of the Sahara which was supposed to be rich in gold but about which little was known. One of these routes, the most important of the two, received at Ouargla traffic coming from Tahert and from southern Tunisia. From Ouargla it led to Tademekka and Gao. There is no doubt that the rapid realization that Gao was not at the centre of the gold area led travellers to proceed further, in the direction of towns nearer the gold-bearing areas. The Negroes succeeded in stopping this advance without any apparent conflict, far from the mines. This traffic, under the twin impetus of the Rustamids of Tahert and the Aghlabids of Kairouan, probably channelled gold, African objects and slaves towards the north-east. Archaeologists have now established that in the ninth century luxury products and trinkets—perhaps more so than salt—came from the north: glassware, ceramics and copper rings, possibly gilded.

Though there is nothing to indicate that regular trade was established along this route at that time, traces of the import of products from the south are sufficient to indicate that frequent trade occurred between the eastern Maghreb and the Sahel, linking up two regions of Africa deep inland, far from the racial intermingling of the coasts, and paving the way for a twofold and essential movement: the first Islamization of the Sahel and a relative ethnic mingling whose traces are apparent. The widespread use of the dromedary, whose utility had up to then been fully realized by the Berbers and had been neglected by the Romans, the Vandals and the Byzantines, enabled the Moslems to make journeys which had formerly been impossible on horseback.

In the ninth century another meridian trade route developed: connecting

Sidjilmasa in the Sahel with destinations of which we are still not absolutely sure.

From the ninth century onwards West Africa underwent the first rapid modifications of a state of affairs which for thousands of years had evolved slowly.

Further to the east, older routes were reopened by the Moslems. Al Yaqubi refers to the existence at the end of the ninth century of an important traffic along a route connecting Fezzan with the southern regions, via Bilma. This was a route along which black slaves were transported after having been captured during raids on the pagans, as al Yaqubi explicitly states. It was also a route along which Islam penetrated southwards and which was used to convey products from Cyrenaica and Egypt—especially fabrics—to the populations of Tchad.

From the seventh to the ninth centuries at least, the Nile valley was no longer the flourishing trade route it had been in antiquity. The installation of the Moslems in Egypt and the bad terms on which they lived with the Nubians and the Buġa for the first two hundred years made the circulation of people and merchandise south of Aswan difficult. But in the ninth century a rapprochement with the Buġa who lived between the Nile and the coast made it possible to resume working the gold mines of Wadi Allaki and perhaps the emerald mines situated further south-east.

Along the eastern shores of Africa, Iranian coastal traffic prior to the Moslem conquest was probably in competition with the last efforts of the Ethiopians.

The imperialism of the Fatimids had a profound effect on Africa in many respects. With an eye to deriving the resources necessary for their world policy from the vast hinterland south of their successive territorial dominations, they concentrated intensively on exploration and the working of mines; the competition between them and the Ummayades in the west and the Abbassids in the east had major consequences for Africa. As a result, the tenth century, and especially the second half of it, was the point of departure of an accelerated movement of transformation of the continent, which was more than ever before concerned with contacts with the outside world.

To the west, the Fatimids, so long as they dominated Ifriqiya, sought to establish at any cost a regular link with the Sahel, rich in gold. They needed this metal to prepare the conquest of Egypt, a decisive step in their struggle against the Abbassids. Hindered by the practically irreducible control of the Ouargla route held by their religious adversaries, they chose the eastern itinerary from Sidjilmasa, which they used more regularly than it had ever been previously. Henceforward, gold arrived at Sidjilmasa, where it began to be minted in the mid-tenth century, doubtless for the Fatimids.

The interest of the Spanish Ummayads was quickly aroused by this traffic. After 980 they succeeded, through intermediaries, in getting their hands for twenty years or so on Sidjilmasa and the western gold trade. Perhaps at this

time a more orthodox Islam began to penetrate to certain parts of West Africa.

From the second half of the tenth century this inter-African trade was sufficiently active to attract Ibadite traders, whose activities have been described by R. Idris and T. Lewicki, to the Sahelian area. In the eleventh century one of them, on his way to settle at Tademekka, reached Ghana and subsequently Audaghost, where he married and lived for eleven years. There are records of partnerships at Sidjilmasa and Gao, perhaps bound by contract, for the Sudan trade.

Though the general directions of meridian trade scarcely varied, the itineraries varied according to the balance of power and interest. Ouargla lost some of its importance to Sidjilmasa. The salt workings of Taghaza, which provided such a valuable product to exchange for gold, turned the former route which led to Audaghost eastwards towards Ghana, at least after 1100. As political dominations changed, merchants seem to have sought contact with the true masters of gold.

Installed in Egypt, the Fatimids had the double task of controlling two trade routes which also brought gold to whoever dominated them. The Nile route, where they instituted a policy of more peaceful relations with their neighbours, and probably obtained trading facilities; and the east coast of Africa. It was perhaps at this time that the most intense effort of discovery was made towards the south, and that traffic in Rhodesian gold towards the coast began. In any case, traffic on the Red Sea and transport overland to the Nile gave the delta a new prosperity in the twelfth century which enabled it to compete with Syrian ports. Since the eleventh century, Fatimid coinage had dominated the traffic on the Indian Ocean.

In many respects, the former equilibrium of Africa was then destroyed. The Sahel was visited by traders from all over North Africa and Spain, and was more accessible to Islam; but doubtless opposition between animists and the converted was more marked.

Of course, travel along the east coast of Africa and in the Indian Ocean is linked with the difficult question of Madagascan origins, on which light is still far from having been thrown and which unfortunately provides no information to clarify the subject with which we are dealing here.

C. African Gold and the Moslem and Western Economies

Few questions have been tackled more often in the past thirty years, and often imprudently: gold from Sudan also became, in some cases, a veritable myth. And few questions are more difficult to elucidate. The utilization of gold can be properly studied from two aspects only. One is the amassing of treasures in the form of art objects and jewellery; this is not very reliable, because the same metal may be remelted and used several times over. The other is much more important; coinage is usually dated and hence allows of satis-

factory qualitative evaluations. Unfortunately, the flukes of discovery make quantitative evaluations tricky, and because of the dispersion of coins we encounter very serious difficulties. Nevertheless, this is today the only reliable indication of the existence of supplies of precious metals to a given region.

No civilization was free of the idea that gold was accursed, or at least taboo, and that its extraction involved terrible dangers. The Moslems and the Christians of the Middle Ages were also disposed to believe the fables inherited from antiquity, according to which the 'South' of Africa was an area where gold was born and lived, guarded by monsters. The Moslems never seem to have seriously attempted to acquire control of the African mines, except perhaps in the Nilotc regions; they left their workings to animist Negroes. And the legends continued to circulate.

In the Middle Ages, gold was produced in Africa not in one region, but in three. An overall study of the subject should—at least in the form of a hypothesis, so much still remains to be done—evaluate the share of each production zone in the enriching of the Mediterranean world. Black Africa exported the gold it produced as a valuable merchandise which made it possible to buy such vital produce as salt.

The mines of the Middle Nile—those of Ouadi Allaki—were known in antiquity. After the Moslem conquest they very probably supplied, even if irregularly, the coinage of the dynasties which succeeded one another at Fostat and later in Cairo, as well as the traders of the Pharaohs. According to Al Yaqubi, these mines were being fully worked at the end of the ninth century. We are not sure how long this working continued. It is highly likely that the Fatimids, deprived of western gold as a result of Ummayad competition or Zirid disloyalty, sought a regular supply of precious metal from this source. The systematic exploration of the valley of the Nile by Al Uswani, probably on the orders of the Fatimids, would correspond quite well with commercial policy and a search for gold; similarly, the earlier journey of Ibn Hauqal to Sidjilmasa probably had the same end in view.

From the tenth century onwards prestigious Ghana was probably known to traders as a land of gold in West Africa. We consider it likely that this gold was not regularly exported before the ninth century to Ifriqiya for the purpose of minting coins, nor before the tenth century to Sidjilmasa and the Fatimid treasury, and only subsequently to the Ummayad and Almoravid workshops. The Almoravids instituted a coinage of excellent quality, the finest that the Moslem west had so far known—which obviously owed much to the fact that they controlled the southern routes. Though the Almohads still further increased the weight of coins, it is not certain that they succeeded in maintaining consistent contact with the Sahel and that gold reached them as regularly as it did their predecessors. Many indications point to the fact that the southern areas of Africa again became separated from the Maghreb at that time, and turned once more towards Egypt. The Spanish policy of the Almohads even turned them away from Morocco, where the advent of the Banu

Maqil probably created a barrier between them and their far-off suppliers of gold.

However this may be, Western traders were not long in discovering that the ports of North Africa held gold coins and perhaps ingots or jewellery. Inhabitants of Marseilles and Genoa frequented Ceuta as early as the thirteenth century, as assiduously as the Venetians visited Tunis. The hypothesis cannot be excluded—though it must be very closely checked—that African gold contributed to a large extent at that time, through the Moslem world, to reopening the gold coinage circuits in the West.

If we accept the fact that between the eleventh and thirteenth centuries—to be prudent—a very steady and well-balanced traffic enabled the Maghreb to import gold in exchange for salt from Taghaza, we will sooner or later have to know in what quantities. The figures established by R. Mauny seem optimistic, and it is unlikely that several tons of gold were conveyed northwards every year. Neither the volume of Moslem coinage nor that of Western trade up to the thirteenth century seemed to have necessitated such a steady and large-scale afflux. In any case, we must cease considering gold from Sudan as inexhaustible and abundant. Things certainly became more difficult at the time when the Mali in turn controlled the goldmines, and still more difficult when the conquest of the saltmines by the Songhay threw the former trade relationships completely out of balance.

The gold of South-east Africa was doubtless exploited from an early date, just like that of West Africa. Probably it accounted for a more or less regular traffic overland towards the north. Cosmas Indicopleutes, in early medieval times, refers to expeditions overland lasting ten months, in search of gold. He explains that in the countries visited 'the winter of the people there comes at the time of our summer'; it is reasonable to suppose that, via the lakes, the gold-producing regions of South Africa were sometimes reached.

As early as the tenth century, Moslem sources refer to the country of the Zang as rich in gold; but indications are still rather vague.

From the eleventh century, a sea traffic in gold was established between Sufala, where it was centralized, and mainly Kilwa, from where it was exported to the Moslem world. Doubtless the development of this new gold route, regularly referred to by authors after 1000, must be attributed to the Fatimid expansion. We may wonder whether African gold was not also exported to India, at least after the eleventh century. In the twelfth century, Idrisi stresses that gold abounded in the region of Sufala, and that it was melted by means of burning cow-dung; he also emphasizes that the inhabitants preferred gold jewellery to copper jewellery. Without doubt, the mines were located well inland and the export routes, until then overland, switched to the sea when the demand from Moslem traders became important. This does not allow us to date the working of the mines themselves; but it makes it possible to date the export of important quantities of gold via Sufala at the eleventh century at the earliest.

Gold was not the only substance demanded from Africa and whose export was organized from the interior of the continent.

Like gold, ivory was not utilized by the African Negros. But as early as the tenth century it was bought in substantial quantities in Africa by Moslem traders who sold it on Indian markets, where there was a heavy demand for it and where it was used for the handles of daggers, the hilt-guards of swords, and chess pieces. They also sold it to China, where it was used to make chairs. According to one source, a more direct trade was established in the twelfth century between Africa and India; perhaps this was even a resumption of a traffic which existed prior to the appearance of Iranians and Moslems on the African coasts. M. Prasad estimates these exports at nearly forty tons a year.

It is difficult to believe that direct relationships existed with China, even though Chinese records as early as 1083 mentioned the coming of a black ambassador.

Iron, especially after the tenth century, seems also to have accounted for a substantial trade in the direction of India. No doubt that country, which was celebrated for its weapons, found part of the necessary raw materials in Africa.

West Africa had no such valuable product to sell. True, it made a speciality of sturdy shields made of oryx hide (*lamt*) and exported oryx hide, dyed violet, to Sicily for making shoes that never wore out. It is impossible to assess the volume or the value of these exports.

But Africa imported as well as exported. In the first place, there was salt, in which the continent was quite tragically lacking. Medieval trade provided important substitutes for salts of vegetable origin gathered by the inhabitants of the forests, and salt obtained by washing the soil or gathering crystals. The few local saltmines were probably eclipsed, after the tenth century especially, by this organized trade. From Taghaza, Bilma, Ethiopia, and many other little-known or unknown sources of salt, skilful traders extracted and concentrated this product, which was the most easily exchangable of all merchandise south of the Sahara.

The import of fabrics began as early as the tenth century. Cotton fabrics from India were purchased on the east coast, from Egypt in the Tchad area, and from North Africa and Egypt in West Africa. We find references to lengths of silk being imported into East Africa in the twelfth century.

Spices and jewellery were also among imports, but it is impossible to estimate quantities and values.

Medieval Africa, besides buying and selling, also gave things away. The tradition of gift-giving, so strong in all civilizations, existed in Africa too. Bamun custom, as established by Sultan Njoga, required that the gifts of alliance between chiefs should consist of ebony, ivory, oil, cola, and especially salt. Other gifts went to friends in the outside world. In 1031, Ziride al Mu'izz received slaves as well as giraffes and other animals from Sudan. In 1257 giraffes were sent from Kahem to Tunis, and 1360 from Mali to Morocco.

D. Africans Outside Africa

Like the Slav countries and Central Asia, and like England at an earlier date, Africa in the Middle Ages was a reservoir of agricultural, domestic and military labour. While Europe found such labour in the countries to the north, Islam demanded the men it required from black Africa.

At all periods, Egypt enrolled many Negroes in royal guards and militia. They served Kafour against the Fatimids, and later backed the Fatimids, playing an undoubted political rôle in the eleventh century when they fought against the Turks. If we are to believe Christian miniatures, they took part in the defence of Damietta by Moslem troops. They were intimately linked with the official life of Egypt until their adversaries the Turks came to power.

From the Aghlabid period, the Ifriqiya included black militia. It is very difficult to evaluate the presence of Africans in the Fatimid period. In 983-4 Buluggin purchased a thousand Negroes, doubtless for military purposes. At the end of the tenth century, the Zirids had an African guard which was to remain loyal until 1060 at least. As early as the tenth century, the Cordoban Khalif had a ceremonial Negro guard. In the eleventh century, Mansûr recruited fast Negro runners to convey news and orders rapidly. The Abbasid empire used Negroes for police and military purposes, though in small numbers according to Mas'udi.

The export of Negro slaves to Moslem countries poses many problems. Figures have sometimes been advanced, but they should be very carefully examined. Neither the volume nor the regularity of this trade are known to us today. At the most, Moslem sources give us some precise allusions. Al Yaqubi, at the end of the ninth century, refers notably to the trade in captives from the Tchad regions who were brought via Bilma and the Fezzan. At that time the goldmines of Ouadi Allaki were worked by captive Negroes; as were the salt-mines of Taghaza in the fourteenth century, according to Ibn Battuta. Mas'udi writes of Negro children being purchased in the Zang country by merchants from Oman.

In the ninth century workers—many of them black—were employed in Mesopotamia on the de-salting of land destined for cane sugar plantations, and they organized a terrible revolt under the direction of an Iranian between 877 and 883. But it is difficult to know where they came from, and when. Doubtless they came by sea from the east coast of Africa. Ibn Khurdadbih and Al Biruni both tell us that the Negro country provided, as did the country of the Slavs, eunuchs for the Moslem world. We must also remember numerous servants, whose power and influence were in some cases great, in the entourage of kings and khalifs in Baghdad, Cairo, Kairouan and Cordova.

The territories near the forest zone south of the Sahel, situated north of Lake Tchad, were—according to the same authors—for long the lands where these men and women were captured and exported northwards.

It would be important to know whether these transfers of human beings constituted a regular trade, and also whether such sales took place outside the Moslem world, in Europe and Asia. The rare indications we possess today do not point to a regular traffic. Chinese texts mention black domestic servants as early as the third century.

Negro women were no less in demand than men in the Mediterranean world. Spain paid a high price for African cooks. Some of them were promoted to the rank of concubines and in some cases became renowned musicians or storytellers. Ibn Hazm set the tone when he wrote 'Never reproach a man for having a Greek, Sudanese or Persian mother.'

A similar tolerance certainly existed for a long time in the Berber world among princes or traders who sought contact with black Africa. It would be interesting to make a close study of the traces of racial intermingling which characterized the early Middle Ages, following antiquity, and of which there are clear examples in the valley of the Nile. One of the legends concerning the foundation of Sidjilmasa attributes a major rôle to a Negro—even if he was quickly and cruelly eliminated by his companions subsequently.

One of the celebrated rebels of western Islam, Abū Yazid, the Donkey Man, was the son of a Negro woman and a south Tunisian merchant. How long did this contact with the Negro world last? There are many indications of a less favourable attitude during the Almohad era; and in the eleventh century the loyal Andalusian Ibn Abdun, though a Moslem, advocated mistrust of the Negroes. In the thirteenth century, more so than in any preceding century, there was a form of rupture in Egypt as well as in western Islam of the previously existing agreement between black Africans and the masters of the various regions in the north of the continent.

So we see that contrary to a firmly established legend, Africa was substantially present, though indirectly, in other countries during the Middle Ages.

In order to establish that the converse was also the case, we should examine here how these countries outside Africa were in fact present there. The question deserves a more thorough examination than the brief references to it so far made. What was the genesis of a Nubian art such as that revealed by the excavations at Faras? Can we discover, in the manner of the excellent study made by J. Schacht on the spread of certain types of mosques in West Africa, serious traces of proven influences? In any case, we can no longer confine ourselves to simple affirmations which draw immediate replies, most of them justified, to the fact that the Whites taught the Negroes to build towns; that it was an Andalusian architect who first revealed the secrets and forms of true architecture to the Malians; just as, much later, it was inevitably the Whites who transmitted the art of smelting iron to the Negroes. We prefer for the time being to leave this voluminous and interesting file pending until sufficient documentation is available to deal with it.

3. AFRICAN CULTURES FROM THE SEVENTH TO THE THIRTEENTH CENTURY

Until the eleventh century, Africa remained relatively stable; the ancient political, economic and social organizations probably varied very little. The eleventh century saw great innovations; Islam advanced rapidly in the direction of Senegal before and after Almoravidism, and towards Tchad and Ethiopia, bringing religious and commercial transformations and a considerable extension of the geographic field of knowledge.

It was not until the fourteenth century that a movement of comparable scope occurred in Africa with the apogee of the Moslem empire of Mali, the eviction from Christian Nubia by the Mameluks and the Bornuans, the assault against Ethiopia from the shores of the Red Sea; a new phase in African history began, which was to last until the end of the sixteenth century.

A. Nubia and Ethiopia

This part of Africa differs from the rest of the continent ethnically and in every other respect. Yet geographically and through the influences which it exerted and to which it was subjected, it was one with the black and the white regions and with the seas to the east and the civilizations which they brought into contact.

Divided between the demands of the Nile and of the Red Sea, Ethiopia played a major rôle in the Red Sea in the Roman, and subsequently in the Byzantine, alliance against the Iranians at the end of antiquity and during the fifth and sixth centuries. Perhaps it was more from Syria and Byzantium than from Egypt that Ethiopia received Christianity in its monastic form. Perhaps also this land influenced the art of the Arabian Peninsula.

The brilliant Axumite monarchy, present in the Near East, commanded the port of Adulis and was able to mint medals and coins. It had been officially Christian since Ezana (fourth century) and still cut a considerable figure in the seventh century when the members of the first community of the adepts of Mohammed sought refuge with the Negus. But in the tenth century, the glory of Axum was finished; the Moslem fleet had gradually replaced the Ethiopian fleet in the Red Sea, and Adulis was ruined. The Moslems who initially depended on the king began to settle on the coast, from where they progressively moved inland in the course of the centuries, towards the plateaux. Internal troubles due to political and religious revolts had destroyed the power of the Solomon dynasty, while the pressure of Ethiopia's black animist neighbours to the north, west and south increased.

The Nile valley regained importance in proportion as the maritime rôle of Ethiopia declined. In the life of the kingdom, it never replaced the oriental façade, from where refugees still came. The part played by the latter (Armen-

ians fleeing from Edesse after the town had been retaken from the Crusaders by the Moslems in the middle of the twelfth century, or Christian Syrians) in the genesis of Ethiopian historical traditions was fundamental, as Jean Doresse has shown.

The Nile also brought Ethiopia into contact with the Patriarchate of Alexandria, which since the sixth century was supposed to send the head of its religious hierarchy to Ethiopia. On the intellectual and religious level, Ethiopia remained a Greek linguistic colony. But relationships were not good either with the Patriarchate of Alexandria or with the Moslem masters of Egypt. At the end of the eleventh century a serious crisis arose with the latter: the Fatimids demanded the free entry of Moslems into Ethiopia and the construction of mosques. The Negus responded by threatening to close the locks which fed the Nile, a terrible threat before which the Fatimids capitulated.

The development in the thirteenth century of the activity of the Zagwe dynasty, which took over the major part of the country, and its resistance to the progress of the Moslems towards the plateaux, together with the creation of a new and remarkable capital, Lahibala, gave the Ethiopians back their prestige and influence.

But Ethiopia's isolation increased when, in the fourteenth century, the Moslems gained control of the Middle Nile and advanced from the coast to the interior of Ethiopia.

The history of Nubia, which for a long time was less well known than that of Ethiopia, has been clarified since archaeological discoveries have complemented the information contained in ancient texts.

Three countries lay to the south of the first cataract. The first two had a mixed population of Libyans and Negroes, while the third was more markedly Negro. These were the Nuba or Nobad, Makurra and Alwa countries. The first was more exposed to the outside world from the Middle Ages onwards, and lost its independence to the second, which was ruled from Dongola. The third, whose capital was Suba, lived mostly apart from the two others, though it did have some economic relations with them.

Converted to Christianity under the pressure of the Byzantines, the first two kingdoms oscillated between orthodoxy and monophysism, and finally went over to the latter in the seventh century, thereby breaking away from the Melkite Patriarchate of Alexandria.

The early relationships of the Nubians with the new Moslem masters of Egypt in the seventh century were difficult. Moslem military pressure probably led to the union of the Nobads and the Mukunites, who in 652 entered into a peace pact which freed them from the obligation of the *djiziya*, but obliged them to pay a heavy tribute every year (a carry-over of that which Diocletian had imposed on the Nubians) in the form of men, natural produce (wheat, barley, lentils, wine), horses and clothing. Revised in the ninth century, this agreement was more or less strictly adhered to until the middle of the tenth century. The Nubians gave up the idea of invading Egypt or of emigrating

there, in exchange for which the Moslems seems to have made little attempt to penetrate southwards.

The preparation for the invasion of Egypt by the Fatimids apparently modified this balance. It may be imagined that the Nubian expeditions in 950, 956 and 958 against Ikchidid Egypt were not chance events, and that the Fatimids tried to use the Nubians to weaken their adversaries. Was it by chance that when a Negro named Kafour came to power in Fostat in 966, these raids ended?

The Fatimids, masters of Egypt, needed the Nubians in order to assess the possibilities of penetration towards the south along the Nile valley. They sent an inhabitant of Aswan to explore these lands of ill-repute, where according to a mid-tenth-century text wild beasts and terrible monsters abounded, and where animal skins were still used as clothing. Doubtless the Fatimids, who had subjugated the eastern neighbours of the Nubians, the Buġa, judged it more expedient to reach the Red Sea by crossing the Buġa country rather than by striking southwards. The mission of Al Uwani was apparently not followed up. All the same, Al Muggadasi noted about 985 that the Nubians were using pieces of cloth as currency. Was this cloth imported? In any case, while the Fatimids remained in power relations between the Nubians and the Moslems remained satisfactory. Doubtless the former, protected by the cataracts, scarcely favoured the penetration of the latter, for in 1172-5, after a new conflict with their neighbours in the south, the masters of Cairo had to send an exploratory mission to assess the wealth of the Nubian lands.

The most southerly kingdom, Alwa, was also converted to Christianity. It remained immune from the troubles we have just referred to. Rich in gold, this kingdom built many churches in its capital from the tenth century onwards, and translated into Nubian the Greek books which had previously been used for the Liturgy.

The religious organization of Nubia comprised seven bishoprics, the most important of which were those of Faras and Dongola. Archaeological discoveries have given us a picture of this Christian Nubia; between Wadi Halfa and Faras numerous cemeteries have been unearthed with steles in Greek, Coptic and Nubian, whose deciphering and classification will enrich our knowledge. Villages have been uncovered and numerous churches brought to light, notably at Faras (eleven churches and two monasteries, dating from between the eighth and thirteenth centuries) and at Qasr Ibrim. In the Middle Ages Dongola was a town of wide streets, with numerous churches and a red brick royal palace. The churches of Faras, with their eleventh-century frescoes, constitute the finest of all these discoveries. There existed a medieval Nubian architecture which was original in respect of its plans, materials and construction techniques, and whose study will now be facilitated.

Once again, the problem of influences received and exerted arises in this region. A. J. Arkell and U. Monneret de Villard stress the Iranian influence—probably from the east—on the attributes of royal power: tiaras and horned

head-dresses. Nubia in turn served as a relay for passing these influences to Darfour and Equatorial Africa. Arkell has long drawn attention to the red brick monuments of Darfour. From the thirteenth century, this influence lost ground before the advance of the Kanem Bornu and the Zagawa, while at the same time Egyptian pressure from the north increased. In 1315 came the first Moslem Nubian king.

B. The Regions of Tchad

The Tchad basin, which was a zone of passage between the Nile valley, the forest, and the western steppes, seems to have had relations mainly with the north, so far as we know at present. The route leading towards Bilma and Fezzan had been explored at a very early date by the Mediterraneans, and had been used for exporting slaves to the north. According to ninth-century authors, Islam was interested in this southward line of penetration right from the start, though merchants and warriors did not venture too far along it.

The impact of Islam in this zone—a fact of prime importance for Africa—was as slow as in the West: it was not really felt until the eleventh century.

Archaeology and oral tradition enable us to situate a few historical milestones in time and space, in a discovery which is at yet very incomplete. The Sao, who probably came from the east of Tchad, settled to the south of Lake Tchad in the tenth century or thereabouts. There, they implanted a civilization of which there are abundant traces and whose origins date back a long way, notably in respect of metallurgy, and have links with the Nile valley. The area occupied by this people, who were great producers of ceramics, is still ill-defined. We know little about their destiny either; they appear to have been gradually subjugated by the Islamized Negroes and to have disappeared after the sixteenth century. To the north and west of the lake lived people who were related to those who dominated Tibesti, and spoke a common language: the Kanuri. The origins of the dynasty which was installed in Kanem are practically unknown at present. Once again, all traditions attribute to the Whites the merit for political and economic progress for which Islam may have been responsible at various times. Islam penetrated to Kanem and Bornu, in its Sunnite and Malakite form, and thus nearer to western Islam than to Egypt, at the end of the eleventh century. At this time, a king of Kanem was converted, and was the first of a long line of strictly Moslem sovereigns. In the twelfth and thirteenth centuries, Kanem and Bornu dominated the entire Tchad basin, from Kano in the west to Ouadi in the east, seeking at the same time to annex—to the detriment of the Nubians—the northerly territories in the direction of Tibesti, and to control the Bilma and Fezzan route along which imported products were transported, including salt. At this time, Tchad's relations with the outside world were very probably mainly oriented towards Tunisia, even though on two occasions in the twelfth century a Bornuan king made the Pilgrimage via Cairo.

Though agricultural progress was made during the Bornuan centuries, and though cotton fabrics were probably made on a large scale, we still know little about the civilization of Tchad in the Middle Ages.

C. The Steppe and Atlantic Forest Zone of Tchad

This region acquired considerable importance after the fourteenth century, but little is known about it prior to that time. Yet it was the home of some of the most interesting civilizations: those in which sculpture reached its finest flower. Nok, the art of Igbo, and Ife all bear witness to an artistic tradition going back a long way but whose continuity for the moment escapes us. Copies of Nilotic oil lamps found in what is now Ghana, and studied by A. J. Arkell, lead us to believe that there were relations with the Nile in ancient times. But nothing is clear, in so far as archaeology has provided very few indications and oral tradition—in some cases abundant—is difficult to exploit where the Middle Ages are concerned. Between Y. Person and most other authors, there is a difference of estimation of several centuries concerning the beginnings of the Mossi empire.

How can we explain the present documentary gap between Nok and Ife, and between Ife and Benin? How do we explain our present ignorance of the origins of the Hausa chiefdom whereas the existence of relations between Tchad and the west is admitted? How is it possible that the dromedary did not arrive in Cairo until between 1432 and 1458, whereas it was in Tchad in the twelfth century? Up to the present, no one has clearly established whether migrating peoples passed through the forest, whether autochthonal civilizations arose there, or scientifically measured what external influences penetrated there. For instance, many authors attribute the Yorubas to the Middle Nile, from where they are said to have emigrated from the seventh century onwards; but they provide only fragile proofs of their assertion. Disappointing though it may be, we are only able to raise questions about the period, rather than provide their answers.

The region occupied by the Mossi is one of the richest in oral traditions. Up to the present, however, no one has set these in an incontestable chronological context. Delafosse refers to the ninth century as the date when the Mossi expansion originated; Pageard says the twelfth century, and Person the fifteenth. Located in the steppic zone near the forest, the Ouagadougou and Yatanga kingdoms manifested a lively expansionist activity in the direction of the Niger at a period which is not clearly identified. In any case, it seems impossible to accept the fact that the constitution of a great Mossi empire corresponded to the period with which we are concerned. The wealth of traditions concerning the mythical origins of the Mossi loyalty and their institutions does not make up for our profound ignorance of the many constitutive elements of their civilization in medieval times.

The apogee of the forest civilizations of the Gulf of Benin, Ife and Benin,

is placed between the twelfth and fifteenth centuries, while recognizing that no sources earlier than the fifteenth century exist. Traditions stress the importance of jewellers in these civilizations, but we know little of anything relating to their art. Here again, only archaeological verifications will allow us to discover the evident existence of an organized civilization probably dating back to the early Middle Ages.

Our detailed knowledge is no better where the northern regions of Nigeria are concerned. Traditions refer to peoples called the Houassa who came from the east in the tenth century and settled alongside other peoples who had come there previously. The creation of towns, which were quickly provided with fortifications and whose origins are also mythical, is dated 'about the eleventh century'.

Kano records give the eleventh century as the date of the beginning of a line of kings who are scarcely more than names to us. But we do not have any really substantial information until after the conversion of these regions to Islam in the middle of the fourteenth century. Once again the problem arises: does the silence of our sources mean the absence of civilization?

D. Sahelian West Africa

As we have seen, this was the area where the trade routes from the north ended. Three principal dominations succeeded one another, all three of them having practically the same ethnic and geographical bases, but whose political centre of gravity moved increasingly southward: Gao, Ghana and Mali.

Gao, whose rôle has been recently highlighted by T. Lewicki, held an important place as early as the thirteenth century in respect of relations with the north and also in connection with the control of gold exports. The oldest western Moslem texts credit it with predominance over other Sahelian African kingdoms. Its origins are today unknown; according to tradition, not substantiated by proof, the Berbers were its first masters. In the ninth century, it was in relationship with Tahert; in the tenth century it supervised the route to Ifriqiya via Tademekka and Ouargla, and received salt which it stored in large quantities. From this time on it was Moslem. It was at this period too that it lost its predominance to Ghana.

Africans today are legitimately proud of the fact that European historiography has identified the empire of Ghana. The country described in particular by Bakri in the eleventh century cannot for a moment be denied the series of remarkable and original characteristics to which we shall refer later. We have already remarked the extent to which the Sahelian region, because of its early agricultural development, seemed destined to give rise to black political groups at a very early date—doubtless much earlier than Islam.

It remains to be known whether the name Ghana, imprudently assigned by European historiography through the prudent explanations on the regions in question given by Tarikh As Sudan, corresponds to a local African historical

reality or to a purely external designation. No ancient records mention the name of a country called Ghana; the word only appears in Moslem sources.

Charles and Vicent Monteil have sought to relate the word Ghana to a common root in order to discover at least its cultural origin. No connection has been discovered with Negro African languages. All that is sometimes accepted today is a connection between Ghana and a Berber root meaning bush, or with Arab roots meaning fortune. From this to an evocation of the white origins of Ghana is only a step, one which is very often and very quickly made.

Whatever the origin of the name—and the question remains open—we must wonder what geographical reality it covered for the Moslems. Everyone reasons as though this toponym had designated a region of West Africa from the beginnings of time. This is far from being the case. In the belief that it demonstrates the early date of the western localization of Ghana, a record is often evoked which is far from stating the conclusions which it is desired to draw: that of Al Fazari.

We know practically nothing about this eighth-century astronomer. His texts are cited from the tenth century onwards by other authors, which does not exclude the probability of interpolations. But there is more to it than this; nourished exclusively on Oriental traditions, Al Fazari (supposing that he really was the author of a reference to Ghana as the 'country of gold') obviously had no means of knowing, through the testimony of a Moslem traveller in West Africa, of the existence of a country whose inhabitants are supposed to have called Ghana. Al Fazari's reference, if it is authentic, designates something quite different from what certain authorities would like to see in it, and alludes to an oriental tradition.

There are many elements to confirm this contention, which is often summarily excluded from any discussion, so eager are some authorities to see Moslem sources in Ghana, a West African country, right from the outset.

The two principal heirs of the oriental astronomical tradition, whose importance has been better realized since the publication of A. Miquel's remarkable work, were Khwarizmi and Souhrab. Both of them refer to a town and a country called Ghana. With regard to the town, Khwarizmi gives the following co-ordinates: longitude $44^{\circ}30'$ and latitude $10^{\circ}45'$ (the meridian of origin of the parallels of longitude was the Islands of the Blessed). Souhrab gives $41^{\circ}50'$ and $9^{\circ}30'$ as the co-ordinates of the country which we may recognize as Ghana.

In both cases, the locations are near to the Equator but at longitudes which, after making angular corrections, lie on the meridian of Cyrenaica, and hence in East Africa. Khwarizmi situates Sidjilmasa at 13° west of Ghana, on the meridian of Tunis. Of course, the deformation which Ptolemaic cartography imposed on Africa partly explains this general displacement eastwards. But the explanation is not sufficient. Gao is east of Ghana, and it lies on the

meridian of Darfour. The whole of the former zone, in which the towns referred to lie, is described from east to west, from the Red Sea as far as Sidjilmasa, the most westerly point, and has no relationship with Morocco.

Souhrab refers to another town, with which an attempt has been made to identify Ghana, at longitude $12^{\circ}50'$ and latitude 32° ; this is in the middle of the fourth region, immediately south of Tangier. This tradition was carried over to the West, and we find it in Venice in 1367, where gold was supposed to have come from an island located slightly south of Ceuta.

In the tenth and eleventh centuries again, a revealing double view subsisted in the writings of almost all oriental authors. Ghana was linked, by the East, with the countries of the Nile. In the West, starting from the north as and when a few details were provided by travellers, Sidjilmasa and Aoudaghost were gradually seen as linked with the Maghreb, but no link existed between them and Ghana until the writings of Hauqal, who was a Westerner.

What all this amounts to is that in astronomic and traditional geography, to which Al Fazari relates, even taking account of all the angular rectifications which must be made to Ptolomaic longitudes, the country of Ghana, though certainly to the west of Gao, remained markedly displaced eastwards compared with the country which was called Ghana in the eleventh century.

In 872 the historian Al Yaqubi did not contravene this tradition; starting from the Nile in the east, along an indecisive line of direction, he described the Negro countries of the south. Among them, Ghana was the farthest, lying beyond Gao.

At the time when Hauqal in the West was helping to modify these views Eastern tradition in the writings of Mas'udi continued to situate an immense country of gold in the south, extending over 3,700 miles, whose eastern part approached the Nile. Perhaps these details led to the hypothesis that the western traffic in gold existed at an early date in the direction of the Nile, far from a route parallel to the Equator. The fact would be interesting if the toponym in question were certainly a toponym. Sometimes it designates a town, sometimes a country, sometimes a people; and if, being of African origin, it were attached to West Africa; all indications combine to prove that such is not the case. In fact (and there are other examples of such confusions; according to Ibn Battuta, the country of Yufi which exported gold into Sufala also adjoined Mali) the country designated by this name was an unknown country of imaginary dimensions, extending along the parallels to the south of Africa: the Paradise, the Eldorado of former days, called Ghana by the oriental Moslems of the early Middle Ages.

A better knowledge of West Africa, and the disappointment caused by the absence of gold in the regions south-west of the Nile, led the fabulous toponym to be attached to the only country which had not proved disappointing and which was one of the last to be known north of the forest. The errings of the name of Ghana ended in the tenth century, thanks to Western travellers.

And yet Ghana was unknown in the West also until the tenth century. Abd

Al Hakam, who wrote prior to 871, did not know the name of Ghana. How could this geographer (whose account of the expedition to the Sudan by Abu Ubaida and Al Fihri is so frequently accepted) have omitted the mention of such a celebrated country if he had known about it? When Al Yaqubi wrote a work of geography at the end of the ninth century he made no reference to Ghana as a western country of gold, whereas he quoted the name in 872 in his History, in connection with East Africa. To the south, his description stops at a country called Ghast, whose locality is vaguely defined.

The decisive transformation occurred in the tenth century in the West, at about the time when Ibn Hauqal was investigating Sahelian and Maghrebian Africa, probably on behalf of the Fatimids. This transformation was obviously linked with the considerable acceleration of the western gold traffic which occurred at that time.

This, we believe, was when it was 'discovered' that Ghana was accessible from the west. Moreover, according to Ibn Hauqal's extremely imaginative cartography, it was situated approximately on the meridian of Oran. Ghana was credited with the possession of goldmines, and its misfortunes began from then on. Suddenly, Gao was no longer a country of primary concern, because it no longer controlled gold supplies.

Thus Ghana ultimately designated, relatively clearly, a region of West Africa. Can one seriously imagine that such a name, attributed under such conditions to a zone to which it did not belong, magically drained the historical content of the societies and civilizations on which it rested, and which were unquestionably much older than the name itself? The hypotheses of B. Davidson and J. Desanges are much more interesting to follow up; according to them, the introduction of iron in the Sahelian zone provided weapons which were greatly superior to any which had previously existed, and conferred the hegemony on those who possessed them. This led to organized resistance to the pressure of Saharan camel drivers. These hypotheses account for the initial efforts of political grouping of Negro societies in the Sahel.

The historical fortunes of Ghana, the land of western gold launched by Ibn Hauqal, Bakri and Idrisi, were so remarkable that at the end of the Middle Ages the imprecision of the origins of its history were realized.

Tarikh As Sudan was the first to give Ghana noble origins, attributing its creation to Whites and placing—with admirable symmetry—twenty-two princes at its head before Hegira, and twenty-two after. The machinery which resulted in the mythification of Ghana's past had been set in motion. The African societies concerned had nothing to gain; and an overall historical investigation of the past of the Sarakholles would today be infinitely more important than the perpetuation of fables which add nothing to (even though, it is true, they detract nothing from) the importance of social, economic, and political groups in the Sahel.

In the ninth century Ghana (did the name designate a man, a town, or a country?) was well known and justly admired, according to the testimony of

Bakri. There was nothing wrong with retaining this name at that time, as traditionally it had been retained by Western authors for a century past.

The details which we owe to Bakri, and later to Idrisi, are quite justifiably to be found in works on the subject. This Ghana is a classic of universal history, which there is no question of rejecting. Archaeology has already confirmed the information given by Bakri concerning the tombs of the black princes in regions which, it is true, are somewhat distant from those where Koumbi Saleh is located. Many other texts substantiate the description he gives of the court of the prince of Ghana, of the justice and the social and economic organization of his kingdom. Here we have the material for a substantial picture, as seen by someone outside black Africa, of West African society before the penetration of Islam. Historians rightly have recourse to this picture when they wish to evoke medieval African societies. It remains to be determined whether it is entirely exact, whether it is complete, and whether it can be extended to the whole of black Africa without reserve.

The Arab texts referred to here merit more than a simple direct reading. They necessitate a very sound critical study in the light of ethnology, sociology, linguistics and archaeology;¹ these texts none the less establish that a remarkable degree of political and social organization existed in the Sahel, even before strong outside pressure was exerted on its peoples.

Historians are divided, in particular, on two points relating to the history of Ghana.

R. Mauny, following excavations, definitively located the capital of Ghana at Koumbi Saleh. Charles and Vincent Monteil successfully contested this interpretation, pointing to texts which are important, but late and difficult to interpret, but which tend to locate this capital on the banks of a river.

So the question must be shelved until an archaeological investigation of a general nature can provide decisive information. We may emphasize, nevertheless, that in any case Koumbi Saleh was a point of exceptional importance in medieval times, as a centre of trade and as a residential town; there were few others of such consequence, apart from Ouadane, Oualata, and Tegdaoust, in Sahelian Africa.

The date and manner of the historical disappearance of Ghana are, somewhat wrongly, identified by R. Mauny with the supposed destruction of Koumbi Saleh, the supposed capital. According to a historical tradition which is increasingly contested nowadays, Ghana was extremely hostile to the Almoravids, to whom R. Mauny attributes the destruction of the capital in 1076 in the course of a furious assault, according to a tradition of As Zouri. Ibn Khaldun confirms this statement, whose substance remains to be established, as V. Monteil has rightly remarked. This is indeed the first problem that arises: the historical source of this item of information is late; the word destruction is inaccurately employed to signify simple pillaging raids; R. Mauny himself accepts that the capital was not definitively ruined, since he demonstrates that it was taken by Soundiata in 1240. Moreover assuming that

Koumbi Saleh really was the capital, many other hypotheses may be envisaged, other than those which have been adopted up to the present.

The skill of the Almoravids in maintaining such fruitful trade relations between north and south seems to exclude the idea of a wantonly destructive raid; it may have been a question of a very strong religious or economic pressure.

Assuming, as we are tempted to do, that Koumbi Saleh had until then been the principal capital, the masters of Ghana may have responded to this pressure by transferring their new capital southwards, nearer to the sources of gold, and abandoning Koumbi to the Moslem merchants. The systematic exploration of such a hypothesis opens up interesting perspectives.

The definitive destruction of Ghana by Soundiata, which Delafosse takes as a certainty and dates at 1260, while admitting the paucity of his sources, merits examination in the light of our hypothesis. As we have already said, the economic and political life of the Sahel moved, the first time, from Gao to Ghana, in proportion as the Moslem penetration revealed that gold was 'still further away'. In the twelfth and thirteenth centuries, a comparable phenomenon may have occurred in two stages: the transfer of the animist capital to the south, and the take-over of the gold traffic and of foreign trade by a new domination, headed by the prestigious figure of Soundiata. Once again, the door is open to a new interpretation, which may be confirmed or invalidated by archaeology and oral tradition, but which seems to us no more unlikely than those accepted up to the present.

Mali, which gradually took over from Ghana, had two origins. Though the most glorious period of Mali was after 1300, the establishment of a vast territorial complex bearing this name dates from the period with which we are concerned here.

In the southern territories of ancient Ghana, perhaps following the transfer of the capital, a Sarakholle kingdom existed in the thirteenth century, at the time of Soumaoro Kante (1200-35).

Still further south, in the Boure region, the chieftainships slowly united to give rise to another kingdom, possessing goldmines, and which emerged from obscurity in the middle of the twelfth century. Doubtless the archaeological excavations undertaken at Niari by Guinean and Polish investigators will help us to know a great deal more about the early history of Mali.

In about 1240 there was a decisive opposition between the inheritor of the southern kingdom, Mari Diata, and Soumaoro. Tradition has highly embellished this opposition, and made it into a veritable African epic to the glory of the victor, better known by the name of Soundiata than Mari Diata. Creator of the largest political unit which West Africa had known until that time, and also the most southerly one, Soundiata was for Africans a hero comparable to Charlemagne. The Moslem empire thus constituted, which held control of gold, corresponded to the Moslem kingdoms in the north, and at the same time acquired an administrative organization and traits of civilization of which

Ibn Battuta has left us a description following his journey to Mali in the middle of the fourteenth century. The empire survived after the death of Soundiata, and in the fourteenth century was ruled by a succession of princes whose wealth and power impressed their contemporaries.

As early as 1336, Angelino Dulcert marked a Rax Melli on a map of the known world. The political, administrative and cultural importance of Mali cannot nowadays be contested. All that remains obscure, as in so many other cases, is the question of its origins, and particularly of the date of Islamization and the forms it took.

E. A Major Influence on African History: the Almoravid Expansion

This is still the subject of a great deal of controversy. One traditional interpretation sees Almoravidism as a strictly Berber movement, highly intolerant, and destructive of neighbouring civilizations: Ghana, Midrarites of Sidjilmasa, the dynasties of Fez and Meknes, and the brilliant Spanish dynasties which had succeeded the Ummayads and the Amirids. The scourge of God from the south, the Almoravids also had a bad reputation among Spanish Moslems and Christians. The Andalusian Al Bakri, surrounded by the intellectual and material comforts of his country and his milieu, considered them as enemies. The Christians, concerned at this new conquering thrust of Islam, were disconcerted by these veiled adversaries who charged on camel-back to the sound of drums. The historical reputation of the Almoravids suffered from these prejudices.

Without going into the question of the name they bore, whose traditional etymology, with excellent arguments, has been questioned by A. Huici Miranda; and without posing the problem of the historical existence and location of the famous Ribat (we scarcely believe in it, and the texts on the basis of which an attempt has been made to demonstrate its existence are quite late) let it be said clearly that the Almoravids are increasingly seen as the principal influence on the transformation of West African history, on every level, probably since its origins.

Thanks to them, Sunnite Islam and the Malekite rites penetrated to the heart of the Sahel, and even into a number of regions of Morocco. As a result of this they gave western Islam a remarkable geographical unity and a heightened prestige. Decisive progress in the Islamization of black Africa dated from that time, as did the common religious language extending from the Guadalquivir to the Senegal and the Niger.

The Almoravid conquest was not, as Al Bakri described it, a bloody holy war waged by fanatical disciples of a strange religion; it was a methodical progression, the systematic grouping of West African Berber tribes. Records reveal the intelligence and patience shown in negotiations for the bloodless acquisition of a country or a town (Aghmat) in order to assure the support of the population (Sidjilmasa), by chasing out the princes. This conquest was

progressive, and consolidated its gains before proceeding further. The installation at Marrakesh, the rapid expansion of southern Morocco, as revealed by excavations, emphasize the already considerable degree of evolution and faculty of assimilation and invention of these Saharans, whom Hauqal in the tenth century and Bakri in the eleventh century regarded as little better than savages.

The conquest was just as well planned on the economic level. In the space of a few months Ibn Yasin succeeded—by taking Sidjilmasa and destroying at Aoudaghost the colonies of Ifriqiyan merchants who exploited the economic situation—in gaining the monopoly of trade traffic on the most westerly Saharan route. The Almoravids also drew upon the African goldmines for minting coinage, and at the same time deprived the Andalusian princes of these resources. Assured of their domination, they advanced northwards along the trade routes towards Fez and the Mediterranean, before proceeding into Spain. They were the first to achieve such a remarkable and close unification of the colonies of Spain and West Africa; this obviously had the greatest possible repercussions on the economic level and also on the cultural level, even though the Almoravid empire did not last very long.

Excavations carried out in the Sane region, near Gao, have brought to light numerous steles which are difficult to interpret, along with imported objects, especially enamelled ceramics. Ten of these steles, dating from the twelfth century, show the powerful hold of the Andalusian civilization as far as this region, though they concern local princes. Such a detail eloquently emphasizes the changes which had occurred since the relative isolation of the ninth century.

F. Techniques and Subsistence of the Africans

Palaeoagronomy, as we have seen, reveals the existence of ancient agricultural origins in Africa. But for the time being it tells us practically nothing about the medieval era. We must therefore turn to Moslem sources for the rare data which may enable us to draw up an initial balance-sheet.

Food was derived from simple produce. Entire zones escape our investigation, others probably perpetuated forms of food production which had not varied from Neolithic times until the period with which we are dealing. Deserts and forest zones belonged to these stable categories.

Elsewhere, in the steppes, near the rivers and coasts, Mediterranean cereals were rare or non-existent. Millet (*durra*) was, however, universally cultivated both in the east and in the west; the paste made from it constituted one of the commonest bases of nutrition. The use of millet beer under various names has been referred to, without a great deal of precision, in the Sahelian zone and in South-east Africa. Rice in the western Sahel, especially in the region of the Senegal River, provided a complement. Some succulent roots were also cultivated, especially in East Africa; taro, for example.

Hunting and fishing provided a few appreciable additions to the diet. They were all the more welcome in proportion as the products referred to above were lacking. Hippos were hunted with spears in Senegal and the Niger; their flesh was eaten and their hide served to make whips.

The inhabitants of the eastern Sahara were great antelope hunters. The animals were brought down by means of poisoned arrows. Poison played a big part in these civilizations; it was used for various purposes, mainly hunting and waging war. In the eastern Sahara, cobra venom was gathered by the Zangăs. Venomous snakes were bred, and a subtle vegetable poison was extracted from a species of marrow. Of course, the use of poison for less normal ends was not rare.

The diet was also improved by fishing; the Zangă, according to records, had 'very white front teeth because they ate a great deal of fish'. Several authors refer to the gathering of produce from the sea in East Africa. There is nothing decisive about the silence of sources concerning West Africa; the contact of Moslem travellers with the coast of this part of the continent was undoubtedly extremely rare. Moreover river fishing was mentioned by Idrisi in connection with these regions, and dried or salted fish was probably already an item of trade.

Of course there were other complements too, including animals easy to catch as frogs, lizards, snakes, and rats, according to Idrisi, writing of the Zangă.

The question of the eating of dogs may be raised here. There are numerous traces of this practice in the Middle Ages. It was current in Sidjilmasa, the Ibadite territories of Tunisia, and the Zangă country. Dog-eating remained ritual among the Senoufus, the Bambaras and the Baoules, in Upper Guinea and in Liberia. Was this an ancient custom in North Africa, or a local tradition possibly adopted by North Africans who were in contact with the Sudan?

Naturally, livestock-raising in various forms was practised. There was an abundance of bovines in the east, and they were also present in western Senegal in the eleventh century, as confirmed by records. This meant that milk, enriched with honey, was another item of diet.

But Bakri emphasizes that the Negroes of Senegal in the mid-eleventh century did not yet have sheep or goats; our excavations in Tegdaoust confirm that sheep, present in that area as early as the ninth century, held an incomparably more important place after the eleventh century, and especially from the thirteenth century onwards. According to Idrisi, beef was cut up into strips and dried in black animist countries, just as the Berbers cut up and dried camel meat.

The cultivation of trees and of plants for industrial use had already advanced much more markedly in East Africa than in the rest of the continent. Ibn Battuta emphasized this in the fourteenth century. As early as the tenth century bananas, coconuts (which were an important item of food), and cane sugar were cultivated among the Zangă. According to Ibn Khurdadbih, in the ninth century, camphor trees were already being grown.

Idrisi states that there was no fruit in the west; the only fresh produce consisted of onions, cucumbers and water melons. The only tree which seems to have been cultivated there was the ebony tree, whose wood was used for various purposes, according to Bakri.

The introduction of cotton into West Africa seems to have been due to the Moslems. In the twelfth century it was cultivated at many different points (Bakri states that cotton was not abundant, yet almost every house had its cotton spinner), which points to the likelihood of the production of lengths of cotton fabric on a family scale.

Clothing was modified in Africa by the introduction of imported cotton and fabrics. Records refer to the skins of leopards and various animals in all regions where these novelties did not yet exist. Small cotton loincloths were made on the Senegal in the eleventh century; they appear to have been sufficiently valuable to be used as a standard of currency. In the east, fabrics dyed red were imported; only kings wore these new garments, according to ancient records. Bakri, and especially Idrisi, refer at length to the costumes of the masters of Ghana made of imported fabrics. They were the only ones to wear stitched garments.

Jewellery, for both men and women, held just as important a place as in other civilizations. We find imported metal jewellery everywhere, copper rings, iron jewellery, highly appreciated both in the east and in the west. In the east, women's hair was ornamented with seashells. In the twelfth century, Idrisi also refers to glass pearl necklaces, trinkets, and various semi-precious stones in the region of the River Senegal. Imitation glass pearls made their appearance, claiming to imitate onyx; but Idrisi does not tell us whether they were made locally. As early as the ninth century, there was a traffic in copper rings between southern Tunisia and Nigerian Africa; in the eleventh century such expeditions to the south were still the speciality of Aghmat. However, was all this jewellery imported, or was some of it of local manufacture?

The production of offensive or defensive weapons was certainly, in Africa as elsewhere, at the origin of technical research and of the production of other items. Records and excavations tell us little about the utilization of iron in the earliest periods. Among peoples who still did not have iron, plants were used to make weapons. On the Senegal, ebony trees provided clubs, and reeds were used to make bows and arrows, formidable weapons in the hands of archers of repute, according to Bakri.

We would like to know more about the art of building among these populations. As is well known, there are opposing contentions on this point. Many hold that architectural and urbanization techniques came from outside; Koumbi Saleh, Kilwa, and Zimbabwe are pointed to as remarkable evidence of these outside influences. Others maintain that the Africans themselves knew how to build solid houses and towns, without outside help. We consider that investigation is not sufficiently advanced at the present time to reach a con-

clusion. The example of our excavations at Tegdaoust leaves us uncertain; they have revealed bonded stone houses above much lighter constructions, at a time when the Berber influences of Ifriqiya were strongly felt. We are tempted to conclude that this architecture was imported. But the Almoravid movement channelled quite a skilful architecture northwards, as found in ancient Marrakesh; this is at least a southern technique very well adapted to the requirements of the Saharan countries.

Was it copied, or was it original? And what was the artistic expression of these peoples, through the fulgurations of Nok or Ife, and perhaps of Zimbabwe, and whose almost total disappearance leaves us little chance today of finding a satisfactory answer, except on one point, ceramics. Functional and aesthetic, these constitute a less pure record of artistic expression than others, but one which, in the present case, is fundamentally irreplaceable on the level of techniques and on the level of art.

4. THE APPROACH TO A BETTER KNOWLEDGE OF MEDIEVAL AFRICA

A. Social Time and Chronological Time

One of the greatest technical difficulties at all levels of contact with the history of Africa, from research to the communication of the results of such research, is the apparent opposition between time as experienced internally by the Africans from day to day, and mathematical time which serves to measure the development, uniformly aligned along a given axis of reference and comparison, of chronologies specific to each area of civilization. This abstract, continuous and monotonous time contravenes all African habits of living; it is conceivable only on condition that we accept the necessity of the socialization and universalization of history beyond that of each individual man, his family, his ethnic group, his nation, and his continent.

But although nowadays we know quite well, by ethnological and sociological observation, what the African's own time of reference is, we know little or nothing of his own notion of time and how he measures it.

The African has scarcely had any need to objectivize time; but when we consider that the passing of time consists of regular rhythmic cycles in a man's life, year by year, week by week, day by day, in contact with a nature or a society, which gives it its dimensions and its reference point, or by reference to a metaphysical society in which the reference points of memory and participation alone incorporate the living human being in the past time of his ancestors—which is unimportant—we have to ask ourselves whether the progressive chronological succession to which historians attach such importance as an instrument of precision is likely to count for anything, for the African, other than as a cultural reflex borrowed from other civilizations.

The African memory, a prodigious recorder of facts, is the receptacle of an

unreasoned time that has been lived through, which history is concerned with dividing into equal spaces, measurable from outside. The whole of traditional African society and culture is contrary to the idea of an objective and measured time. Such a heterogeneity of two appreciations of time is a subject of study for philosophers, sociologists, and even cineasts: up to the present, historians have paid little attention to it.

Yet how can one fail to see that this is the principal obstacle to the utilization of an oral tradition in which time is subjected to a series of subjective deformations, sometimes contradictory, sometimes cumulative; not only deformations due to each manner of passing on tradition, but also deformations which amplify the volume of time, which magnify the life of great heroes and of important periods, and deformations which reduce the volume of time, which concern obscure or discreditable periods; deformations which lead to projecting as far as possible into the past the mythical origins of the history of the group, irrespective of the enormous gaps which this causes in 'historical continuity'. The utilization of oral tradition is conditioned, especially where ancient periods are concerned, by a severe critical reduction of the information which it provides on the international chronological scale. But to break the circuits of this tradition is painful for the African, almost a cultural betrayal; sometimes he prefers to try to rediscover history by intuition and instinctive feeling within the time which he is accustomed to, in order to attempt the painful and difficult operation of reducing this history to the time of universal history. This cutting up of African historical phenomena into measurable and comparable sections is however indispensable, in particular where the Middle Ages are concerned.

In undertaking this task we must not neglect the study of the natural time in which history developed for the African himself. Otherwise we would be neglecting what is probably the most important aspect of the question, both for the African and for the understanding of the profound rhythms of African history. In any case, history cut up into chronological sections does not meet a primary need among the Africans themselves, any more than the latter are primarily sensitive to the international language of historians' congresses.

B. The Bases of Historical Investigation in Africa: Written Records, Oral Testimony, Archaeological Discoveries

Medieval African civilizations, as we have seen, can be and have been investigated on the basis of written records. And we must not forget that many such records are probably still lying in public or private libraries and their publication would confirm, invalidate or throw new light on what we already know. Moreover, we have seen that these texts, sometimes incomplete, often inaccurate, written from the standpoint of deforming cultural prejudices, far from cover the whole geographical area of the immense continent. We must therefore have recourse, in addition, to other procedures of investigation.

Jan Vansina, Amad or Hampate Ba, Djibril Tamsir Niane, Yves Person, Bouba Hama, have all shown, in various ways, what can be learned from oral traditions. But as we have said, these traditions must be treated by the methods of a historical criticism which separates them while, at the same time observing their specific organization which is evocative of past mental structures. They are obviously irreplaceable in the case of the more recent periods, but they are increasingly difficult to utilize if we go further back into the past. They are moreover of very different types; the most valuable of them are certainly those which do not seek to recount the life of heroes, but which more or less consciously convey information of a topographical, ethnic, geographic, social and cultural nature. They are on no account to be neglected in the investigation of medieval history. How can we hope to know, one day, the real historical past of the Mossi without taking careful note of the image of them which this past has retained in their rich oral tradition, an image which serves at least as an element of reference and as a subject of discussion.

J. Maquet poses contradictions in connection with the ancient forest civilizations to which no written record and no oral tradition can provide solutions.

'There had to be highly specialized craftsmen to master the technique of wax-casting to fashion delicate gold jewellery, and to work ivory as at Benin. There had to be regular relations with far-off countries in order to import the copper necessary for founding metals. Governments had to have greater revenues than could be provided by agricultural surplus in order to possess such wealth.'

The key to all these questions, which themselves lead us to the essential problems of African medieval history, can perhaps be found only in a systematic archaeological investigation.

Systematic for each site, systematic in theme, and systematic on the continental scale, this archaeological investigation will alone enable us to reply to a number of the obscure questions posed by the medieval history of Africa. The investigation of Nubia has opened up a road which must be explored further.

On each site, adequately excavated, the vestiges uncovered should be studied statistically, instead of simply selecting a few items for subjective reasons, either aesthetic or otherwise. Animal bones, pollen, metal debris, fragments of plants and specimens of soil, statistically classified and analysed, are nowadays of no less importance than objects of art. The spectacular discovery of a horde of gold jewellery ultimately tells us less than a series of suitably classified and interpreted plant elements; fragments of pearls or of decorated ceramics whose stratigraphic level has been accurately determined are not to be disdained; they help to constitute statistics of frequency whose indicative value we know from experience. Every fully exploited site provides series of clear statistics which, read vertically, give us a relative chronology, and which read horizontally constitute a pattern of characteristics for successive

periods. This type of investigation, employed in Nigeria and Ghana for long past, is producing important results at Tegdaoust.

The presence, in chronological strata thus defined, of objects imported from countries outside black Africa helps us to pass from a relative chronology to an absolute chronology. From this point of view enamelled ceramics, glassware and pearls constitute, where medieval Africa is concerned, reference points just as interesting as coins—provided, again, that they are treated statistically.

The comparison of the results obtained on each site will in the long run allow us, in time and in space, to define the areas in which techniques and trade spread, to trace with certainty the routes followed by men and merchandise, and to follow population movements and wars. This material substratum of African history will have a solidity whose value can as yet be merely glimpsed. This chronological pattern will make it possible to reveal the continuities—still vague—between civilizations discovered at various points and whose external interdependences escape us. Consequently the investigation must be carried out *everywhere* if it is to be really decisive.

In the forest, where contrary to a belief long held, there are increasing indications that archaeological traces exist, the working of sites is, in the absence of any written records and oral tradition dating from medieval times, the only way of finding out about civilizations whose complexity has been emphasized by J. Maquet, as we have seen.

With the multiplication of working sites and the improvement of methods, this geographical and archaeological quartering of Africa will be perfected in the course of time.

But archaeology can bring us more than a chronological pattern which is as dependable as possible. Though there is little chance of finding ancient pieces of carved wood, ceramics—by their shapes and decorations—and metal objects especially have provided us with evidence, the most remarkable of which has already found a place in the contestable international hierarchy of aesthetic and trade values. The patient and statistical study of techniques of decoration, carried out on accurately dated objects, will one day enable us to reply to fundamental questions. Is African art immobile in time, or has it evolved? A double and doubly interesting reply is already emerging at Tegdaoust in connection with ceramics, which have considerable consistency of shape and an evolution in decoration which may be related to political or ethnic transformations, or more simply with changes in fashion and taste.

The archaeological study of agriculture, arboriculture and livestock-raising is gradually becoming possible. Not only through the discovery of farm implements, but even more through the systematic exploitation of food vestiges. Remarkable examples of the results which can be achieved have been given by J. Barrau and R. Portères.

The investigation which we are conducting on animal bones at Tegdaoust is beginning to bear fruit. It indicates dominant changes in domestic fauna which are not unrelated to historical or climatic observations made by other

methods. At the same time, the investigation on the evolution of food is gradually linking up with that of demography and of the bio-geographic equilibrium of a region where, for example, sheep are abundant or not.

The constant and intimate interrelation of written records, oral tradition and archaeological discovery is the line to be followed by the medieval African historian.

C. The History of Africa and 'Auxiliary Sciences'

In Africa, more than anywhere else, history needs the assistance of other research techniques and other disciplines. They can provide a contemporary image of problems in which elements of comparison must be found; but without forgetting that the fixity of African civilizations is probably no more than a myth, and that evolution is just as natural as life itself for them, as for any other civilization. The method of utilization of these 'auxiliary sciences' derives from this remark. The historian cannot project into the past, without precautions, the results of investigations conducted by geographers, sociologists, ethnologists, linguists and jurists, without making sure that the phenomena of which they tell him have assured correspondence in the past, attested by one of the instruments of approach just referred to. On the basis of present-day observations, he can then employ only one method of comparison: that of chronological regression and serial analysis, which alone can lead him to dependable conclusions. The presence of Griots in East Africa in the tenth century is attested by Mas'udi; this fact allows us to compare their rôle, which this author very clearly evokes, with that observed at various times by other authors and with that observed today by all those concerned with the study of Africa. Mas'udi's reference constitutes the oldest known identification of a form of social life characteristic of the African world, but whose equivalents are found in other oral civilizations. It does not authorize us to reconstitute a whole society from this single detail by reference to present-day examples considered as a whole, in which Griots play a rôle.

These precautions with regard to method having been taken, the contribution—in the form of hypotheses or means of verifying hypotheses—of the various 'auxiliary sciences' referred to is irreplaceable. Let us quote a few examples among many.

In the Bambara religion, *acacia albida* holds an important place. It is descended from the first seed sown by Pëmba, the original creator. This extraordinary tree, whose vegetative cycle is the reverse of the normal cycle, captured the imagination. It was surrounded by veritable taboos, and at the same time performed a whole range of functions in village life. G. Dieterlin emphasizes that for a long time the dead were hung from its branches until their flesh rolled away. She considers that *acacia albida* originated in East Africa, south of the Equator. P. Pelissier notes the decisive importance of this same tree today among the Wolof, the Bambaras, and especially the Sereres;

he considers it to be the main factor in the development of settled living (as opposed to nomadic existence) throughout Sudanese Africa. Such a tree, to which such myths are attached, obviously has a prime value for the historian; where did it come from, when, and how? The establishment of a chronological chart of its presence would provide indications of prime importance on historical routes, on agricultural techniques, and also probably on the dating of the Bambara religion. Today, we may hope that eventually that geography and palynology will be able to answer such questions. A comparable investigation could be carried out on the rôle of copper in medieval African civilizations. Its religious significance for the Bambara and the Sao, for example, poses many problems. The repository of secrets or strength, precious among precious objects, it was associated with water in the two cases quoted. Where did these beliefs come from, from when do they date? Was it the rarity of copper which led to its being endowed with religious significance? Did this religious significance lead to the use of copper jewellery? If so, it must date back a long time, for copper jewellery has been found in quantity in archaeological excavations, and Arab texts refer to objects, including copper jewellery, which reached black Africa from the north. The comparison of analyses of ores and of objects discovered, statistically and systematically carried out, would provide decisive indications concerning the mines from which medieval African copper came, and at the same time indications on copper trade routes. How much new light would be thrown, depending on whether copper in a given region came from Katanga, Mauritania, North Africa or the Central Sahara.

Quite apart from the comparative study of African languages, rich in possible discoveries concerning the relationships and separations between ethnic groups; quite apart from the light which linguistics would be able to throw on the rôle of language in Africa, the simple investigation of the meaning of certain words is historically rewarding. What does the term *Bilad as Sudan* cover, as used by Arab authors? When did it cease to be used to refer to any Negro country other than that of the Zang, and apply more to West Africa? The chronological study of toponyms would lead to definite conclusions, and at the same time would enable us to explore the mentality of medieval authors, so different from ours.

For reasons of method, we shall not present here the usual table of medieval African societies. Firstly because this is to be found in any book devoted to Africa; secondly because no one can manage to make a certain distinction between what is prior to 1300 and what is subsequent to that date. This description is usually given a title which is not always satisfactory: traditional societies and pre-colonial societies. And above all, this description has two serious faults: it is based more or less consciously on the postulate of the fixity of Negro societies, whereas for the Middle Ages everything points to the capacity for transformation and evolution of these societies, the acceptance or even the rejection of outside contributions, and at the same time fidelity to what are apparently the most original characteristics of these societies. Here

we have an interesting historical mixture of variations and respect for traditions which is still little understood; quite often, it rests on too hasty generalizations, such as that which attributes to matriarchy a value specific to all Negro civilizations and which is absent from all other civilizations. A great deal remains to be done, along interdisciplinary lines, to acquire a knowledge of African societies in the Middle Ages.

Animism has never yet been studied systematically, or from the inside. There necessarily existed one or more theological cosmogonies in Africa; they have been described from the outside, in most cases by non-African researchers. More than in any other field, these latter risk observing only disjointed facts, separate from the mental whole which gives them their significance. This was also so in the case of the Arab geographers of the Middle Ages, who have left us a few purely descriptive traces, and who seriously misunderstood animism.

The author of the *Abrégé des Merveilles* writes: 'There is a large tree in whose honour they hold a fête every year; they gather around it and play until one of its leaves falls on them. This they regard as a happy presage.' Maqrisi, quoting an older author, in connection with the populations of the Upper Nile, writes 'most of them believe in a Creator and through him they request the intercession of the moon, the sun and the stars. Others do not believe in God and worship sun and fire; others worship a tree and animals.' Bakri, writing of East Africa, clearly sets forth some episodes of a ceremony involving a mask resembling a camel's head and possessing a mane and a bushy tail. He stresses the magic use of aphrodisiacs of plant origin. Mas'udi probably attended a ceremony to demand rain in East Africa.

Thus the effort to reconstitute Africa's past in the Middle Ages is extremely difficult. We may wonder whether it is worth while attempting the task. What history do the Africans need—their cadres, their intellectuals? What history of Africa does the rest of the world need?—it has been quite content with the absence of information on the Dark Continent so far. A history of Africa, scientific in its methods if not in its results, whose lines of approach and whose requirements we have outlined, and which demythifies and relegates to the background the cult of collective romanticism and heroes, replacing it by an apparently less exciting and more modest rediscovery of collective civilizations in which the peoples themselves are the principal anonymous actors and which alone can ultimately provide the elements of a comparative study of the development of humanity? Or a history of Africa which unites a community in the pride of a re-found dignity even at the cost of a certain degree of inaccuracy, magnifying Negro heroes, without separating that history from its social context, as is the case for other continents? The latter contributes to the construction of a continent or a nation; it is legitimate, and the historian must accept it. But it does not suffice to make the history of Africa comparable to that of other continents, and Africans must realize this fact. Everyone concerned must have no illusions as to the extent of the difficulty and the scope of the undertaking, nor of the absolutely unequal nature of the final results

from one region to another: the definitive history of the Pygmies will certainly not be in any degree comparable to that of Ethiopia.

For all these reasons, the discovery of Africa's past represents a tremendous challenge to historians. Because of the impotence of traditional methods, this task demands efforts, of which there are few examples in the past, in order to integrate new techniques of historical approach. It also demands a concomitant reflection on the true value and the social context of history. If they are to take up this challenge, historians must substantiate and enrich their methods, and at the same time make them sufficiently flexible to permit of contact with a number of disciplines which so far have been foreign to them. Never have the approaches to total historical expression been more exact than in this case; the historical investigation of Africa must be total, for if it is not, it is sterile.

Africa's contribution to the cultural history of humanity is consequently essential and irreplaceable, for the future as well as for the past.

NOTE

1. Let us take a single example. Ibn Hauqal clearly states that among the Rūs, who incinerated their dead, 'the servants of the rich voluntarily had themselves burned, as is the custom in Ghana and in Kura'. In all the tombs which have been excavated, neither Desplagnes, nor subsequently R. Mauny, clearly indicate the existence of ashes which might have originated in such sacrifices. But at Kouga, R. Mauny refers to a superficial layer of ash resting on a layer of banco 'having almost the consistency of pottery', and hence more or less baked. Desplagnes had made the same observation at El Oualadji. Henceforward, when excavating tombs, the greatest attention should be paid to such details. Al Bakri also states 'they sacrificed victims to their dead'; but he gives no further details.

We wish to express our thanks to all those whose assistance has enabled us to write this section; particularly M. Miquel, Lecturer at the University of Vincennes; M. Robert, Assistant Lecturer at the Arts Faculty of Dakar; M. Ayache, Assistant at the Arts Faculty of Tananarive; and students of the Universities of Dakar and Lille, whose participation in the excavations at Tegdaoust and in numerous research projects have contributed useful details on more than one hypothesis. Our thanks are also due to the St Joseph University of Houston, and to Madame J. de Menil, to whom we are indebted for the utilization of valuable iconographic material.

CHAPTER XVI

PREHISTORIC NEW WORLD CULTURAL DEVELOPMENT

I. INTRODUCTION

As a habitat for man, the New World contrasts in several important features with the Old World. It is not only a more compact area, it is in some respects a more integrated one geographically. Natural barriers are less severe than the Himalaya Mountains or the Sahara Desert, both in width and in hostility, and transitions are more gradual. The Rocky Mountains of North America blend into the Sierra Madres of Mexico and central America and the Andes of South America, creating a hemispheric 'backbone' that may have helped to channel movements north and south. The location of the highest mountains along the western margin of the land mass has produced generally parallel vegetational configurations in North and South America. Both continents have lower and more ancient mountain systems in their eastern portions, as well as extensive grasslands. The coasts provide a suitable habitat for shell-fish in both temperate and tropical regions, permitting groups with this subsistence orientation to spread over long distances without changing their mode of life. Prehistoric cultural development in the New World was influenced by the peculiarities of the setting, which promoted interaction between some regions, independent parallel developments in others and left a few in isolation. The setting was not a static one, and during the millennia since man's arrival climate fluctuated and shore lines changed, exerting varying effects on human cultural adaptation.

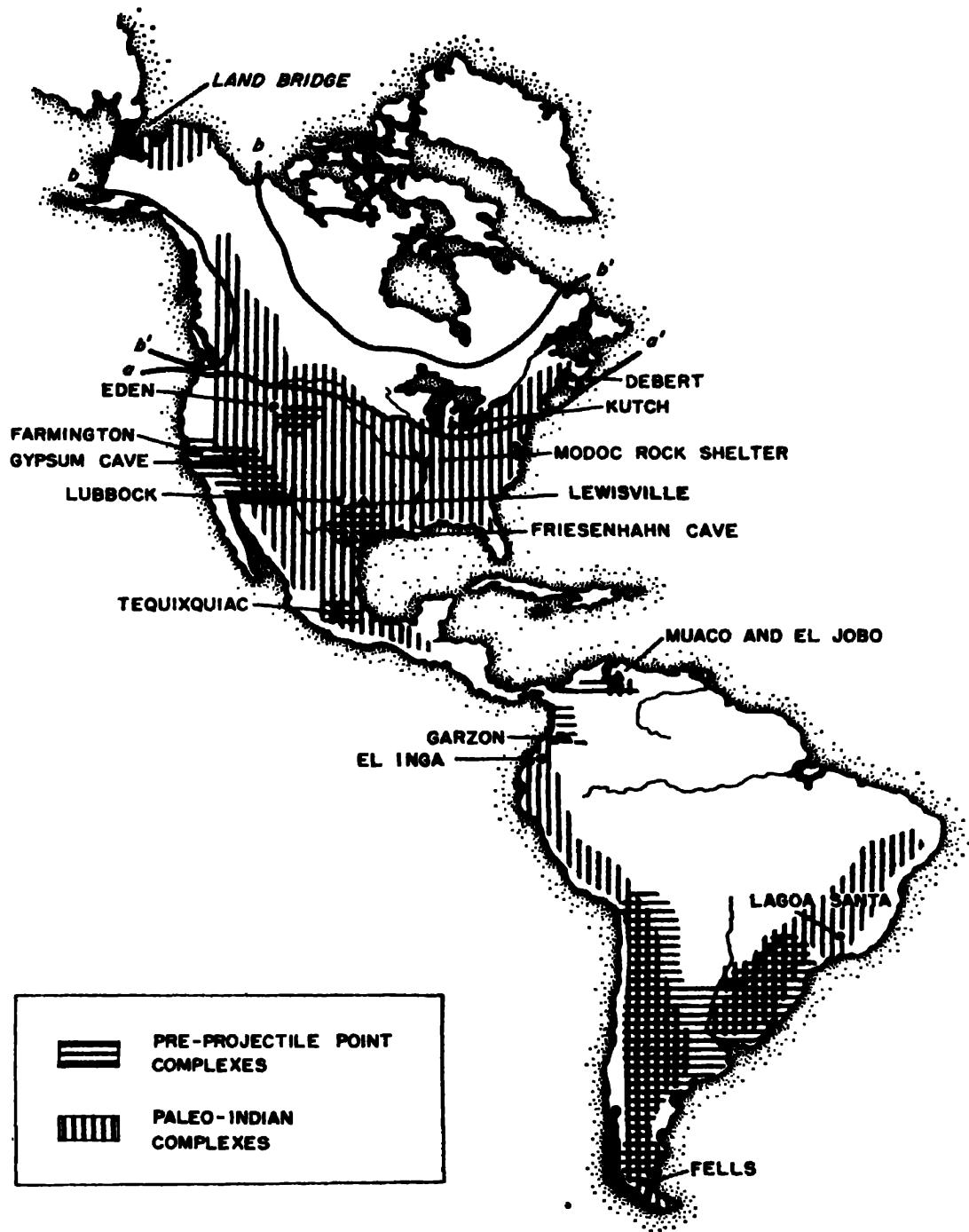
Archaeological investigation is relatively recent in many parts of the New World, and vast expanses have yet to feel the archaeologist's foot, much less his trowel. Even so, the amount of data is enormous. Hundreds of thousands of pages have been published on the better-known cultures, and whole volumes discuss sites and complexes that cannot even be mentioned within the space allotted to this brief review. Generalization also requires elimination of conflicting evidence, and it should be kept in mind that there are few statements in the following pages that would not be disputed by an expert on the area or culture described. The fact that data can be assembled to produce a consistent picture does not necessarily imply that it is an accurate picture. Revolutionary discoveries made in the last decade have required revision of long accepted points of view, and we may expect equally drastic changes to result from the investigation of the many regions still superficially known. What follows represents, therefore, an impressionistic reconstruction of New World prehistory, but one that is not likely to stand the test of many years' time.

2. THE ARRIVAL OF MAN

One of the most controversial issues in New World archaeology is the time of man's arrival. Zoological and paleontological evidence conclusively eliminates the western hemisphere as a possible setting either for human evolution or for the early stages of development of human culture. At the upper end of the time range, there is proof that man had penetrated to the extremes of the hemisphere by 9000 B.C. Disagreement stems from sporadic, inconclusive but tantalizing indications of men's presence scattered over the millennia between 40,000 and 12,000 years ago, which some authorities accept and others do not. The consensus has been moving gradually in recent years from a negative position to a middle ground, and the early date tends increasingly to be viewed with scepticism rather than rejected outright.

There are many reasons for the inconclusive nature of present evidence. Among the foremost is the newness of attention to the problem, and the resulting paucity of efforts to locate very early sites in most parts of the New World. Many finds have been accidental, when deeply buried strata have been revealed by erosion, extractive or construction operations. In some instances, crudely chipped stones are not obviously the product of human rather than natural agency; in others, the geological context is subject to more than one correlation with geomorphological phenomena and consequently with an absolute time scale. Where carbon-14 dates have been obtained, their association with cultural remains may be questioned. Differing opinions as to what constitutes evidence also enters into conflicting reconstructions based on the same set of 'facts'.

Whether he came 12,000 or 50,000 years ago, man entered the New World while he was still a predator, subsisting on wild animal and plant food. It is taken for granted that he entered on foot, at a time when sufficient sea water was impounded in the glaciers to expose a land bridge between Siberia and Alaska. (Map XXV.) This occurred whenever the sea level was lowered about 50 metres, a situation that existed for two long intervals during the last 50,000 years. The earliest land bridge was in existence between about 50,000 and 40,000 years ago, and was used by various Old World species of mammals, including the reindeer and the wooly mammoth, to invade the Americas. After an interval of submergence lasting some 12,000 years, the bridge reappeared between 28,000 and 10,000 years ago. During part of this time, however, a continuous sheet of ice stretched from the Atlantic to the Pacific at a latitude slightly south of the modern political boundary between Canada and the United States. Some 4,000 feet thick, this monstrous blanket of ice blocked passage by man or animals for some 10,000 years. For a few thousand years before the eastern and western segments fused, and again after a corridor reopened, the land bridge was passable. After about 10,000 years ago, the sea level had risen sufficiently to cover the Bering Strait, and since that time the New World has been accessible only by water.



MAP XXV

The existence of a 'Pre-Projectile Point' stage in New World archaeology has been most strongly supported by Krieger (1964) to account for numerous sites that produce large heavy choppers, scrapers, scraper-planes, knives and hammerstones, often in incredible abundance. (Fig. 32.) On the north coast of Chile, the altiplano of north-western Argentina and the plains of northern Uruguay, for example, the surface of the ground is covered for kilometres with these crude implements. In some places, such as El Jobo and Cumare, in Venezuela, such remains occur on the highest and most distant terrace, suggesting considerable antiquity. At Farmington, California, artifacts are buried beneath as much as five metres of alluvium. At the Levi Rock Shelter in Texas, they occur stratigraphically beneath the earliest projectile points. Association with extinct fauna, including mammoth, horse, sloth, camel, giant bison, tapir, dire wolf, glyptodon and mastodon is reported in many localities, among the Friesenhahn Cavern in Texas, American Falls Reservoir in Idaho, Muaco in Venezuela, Tequixquiac in Mexico and Garzón in Colombia.

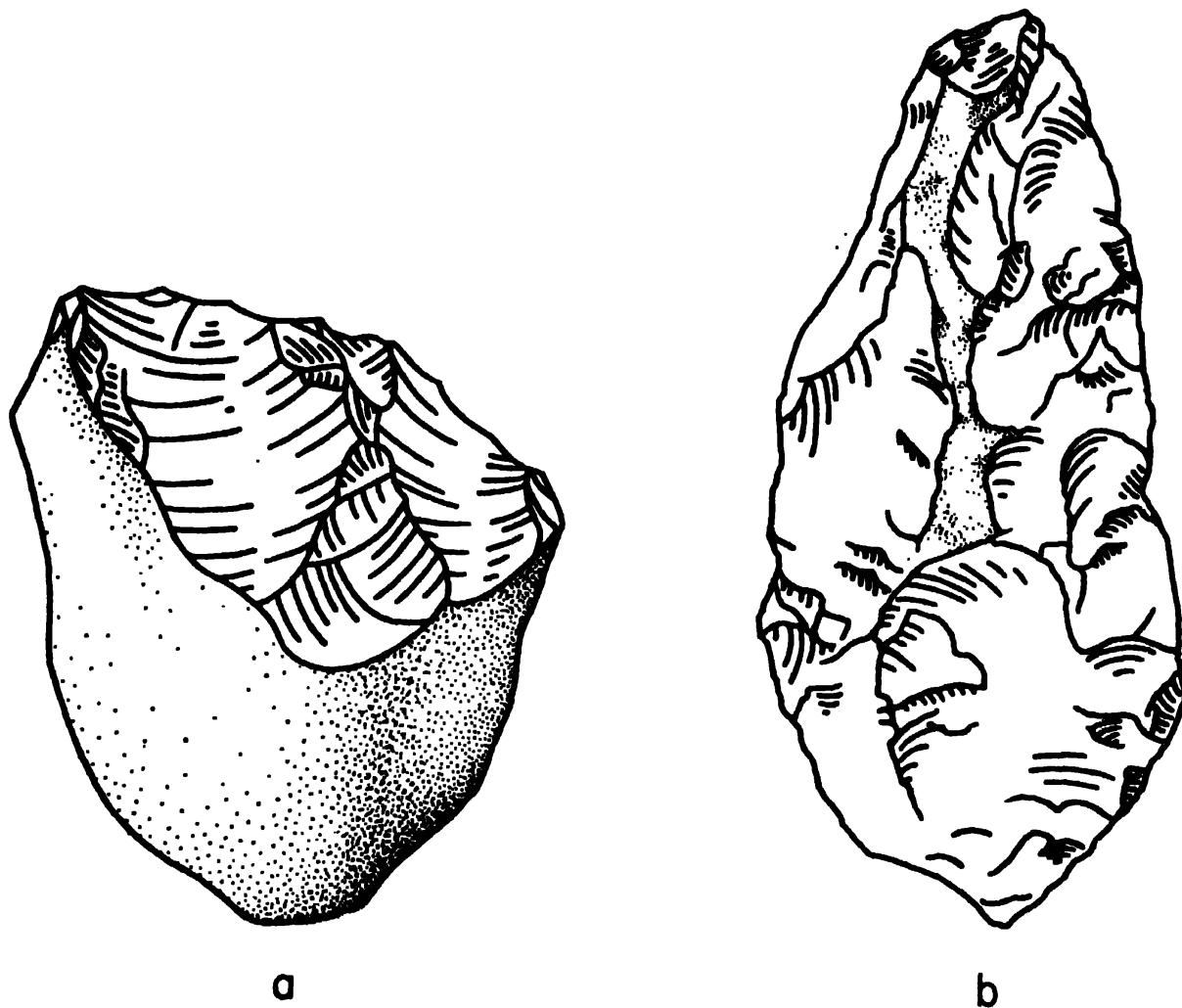


FIG. 32. Typical artifacts from Argentine sites attributed to the Pre-Projectile Point Period. Length of b, 14·5 cm.

(Bryan, 1965). At Tlapacoya, Mexico, habitations and stone artifacts associated with extinct fauna have been carbon-14 dated between $24,000 \pm 500$ and $22,200 \pm 2,600$ years ago (Haynes, 1967; Mirambell, 1967). Other carbon-14 dates extend from more than 37,000 years for the Lewisville site in Texas to $12,340 \pm 500$ B.C. for the Muaco, Venezuela finds.

Although none of these finds is universally accepted, man's presence in the Americas prior to 37,000 years ago is in keeping with the fact that the early land bridge was in existence up to about 40,000 years ago. (Chart 4.) Several species of large mammals, including the caribou and mammoth, entered the New World at that time and it is reasonable to suppose that if conditions were favourable for the prey they were also favourable for the hunter. If man did not arrive at this time, it is unlikely that he would have had another opportunity until the bridge reappeared about 28,000 years ago and before formation of the glacial barrier that cut Alaska off from the rest of North America about 23,000 years ago. This latter alternative is favoured by most experts who accept the possibility of a Pre-Projectile Point horizon.

While the date of man's entry is disputed, there is general agreement that the first immigrants lived in small family groups, perhaps moving within a recognized territory, perhaps wandering freely as the food quest required. The men were hunters, and the strongest or most successful may have exercised leadership over the group. The women probably searched for edible wild plants and undertook domestic tasks such as preparation of hides or the weaving of baskets. Tools and utensils were few and generalized, so that the same object might serve for cutting, scraping or pounding. Shaping was often limited to the working edge and tools were frequently made as needed and discarded when the immediate task was done. In the vicinity of the glacial frontier, seasonal variation in food resources was probably minimal. Farther away, ecological niches must have been more varied, and different kinds of subsistence resources have been available. Roving family bands probably gradually learned to exploit such regions with increasing efficiency as their knowledge of the environment improved. Tundra changed to forest and lush grassland was converted to semi-desert several times during the millenia of glacial retreat and advance, and adaptability to changing food resources was essential to survival.

About 10,000 B.C. a pronounced change occurs in the archaeological record in the form of a striking increase in the abundance of sites and the appearance of new kinds of stone artifacts, especially distinctive types of delicately chipped projectile points. Several types have been recognized, and the oldest carbon-14 dates are associated with the fluted Clovis points (Fig. 33) with an early date of $10,700 \pm 250$ B.C. from a site near Lubbock, Texas. Unfluted lanceolate Plano points (Fig. 34) are believed to appear slightly later on the basis of a 9503 ± 600 B.C. date from Danger Cave, Utah. Later still are corner or side notched points, which were in use at the Modoc Rock Shelter, Illinois, about 7992 ± 400 B.C. South American dates are few, but the presence of Plano-like

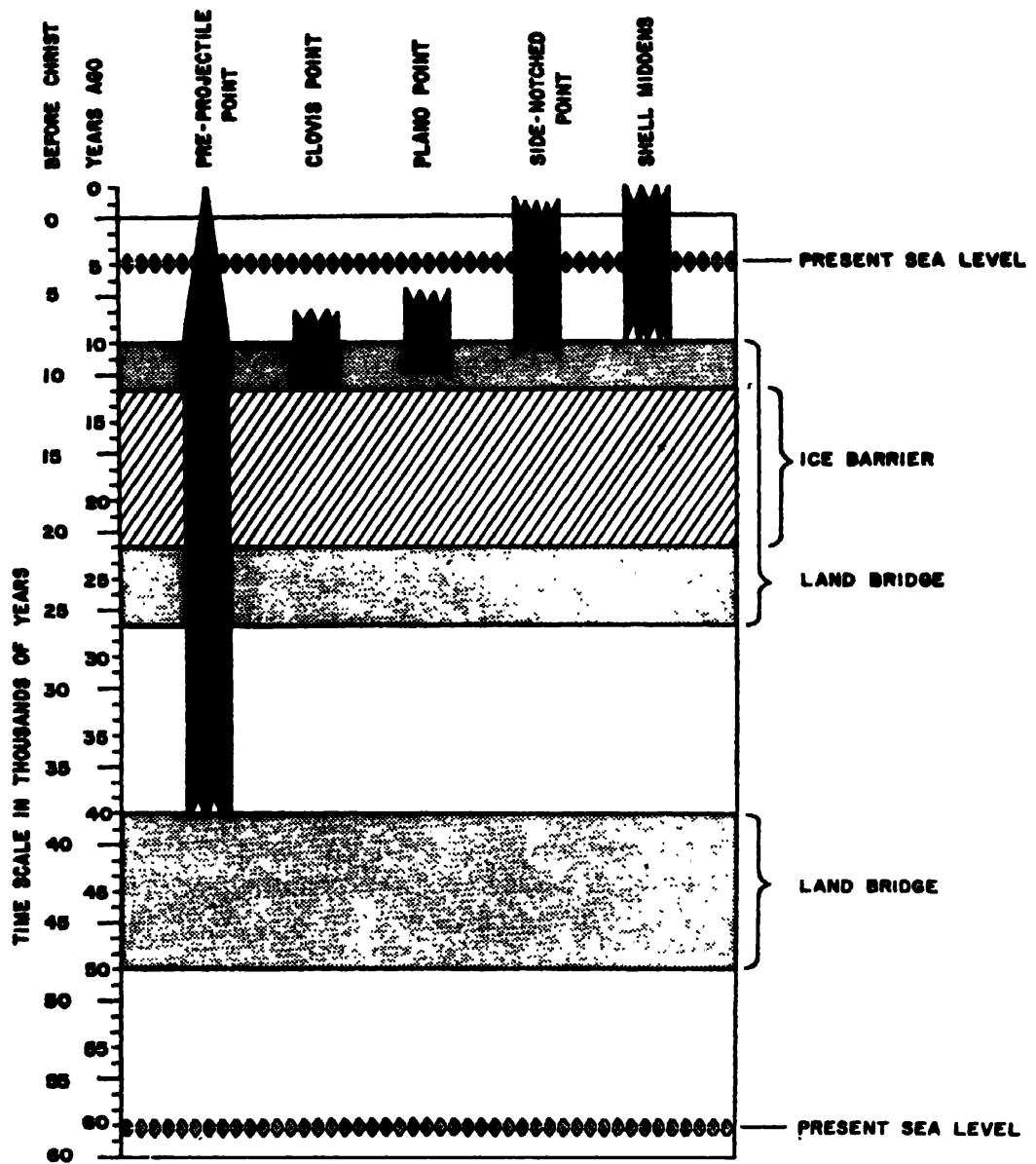


CHART 4. Diagram of chronological correlations between preceramic complexes and the Bering Strait land bridge and glacial ice barrier

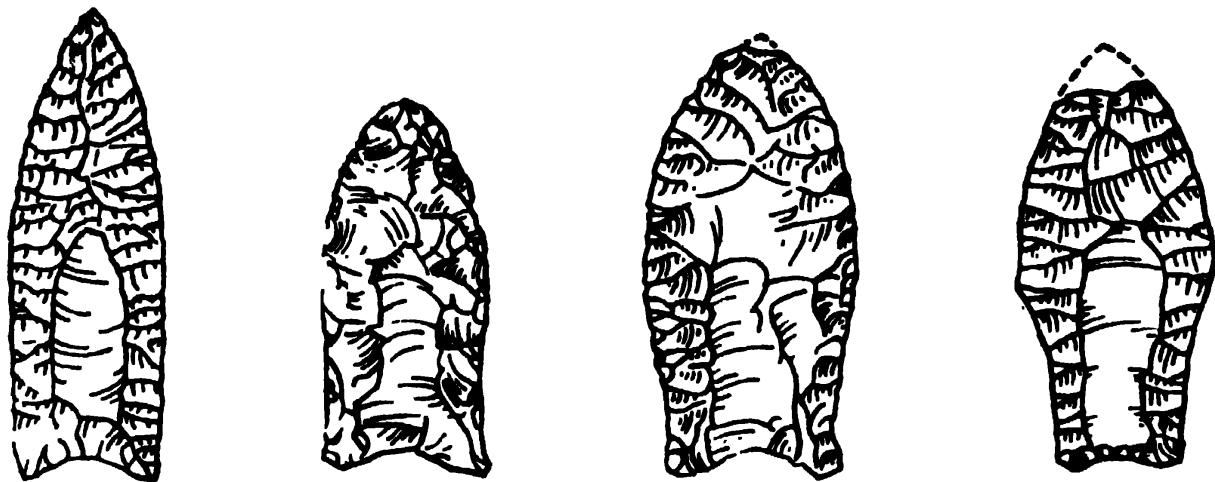


FIG. 33. Projectile points of the fluted Clovis type, showing regional variations in form, a: Lehner site, Arizona; b: New York State; c: San Rafael, Guatemala; d: El Inga, Ecuador.

points at Fell's Cave, in Tierra del Fuego, by 8760 ± 300 B.C. indicates a rapid diffusion of projectile points throughout the New World. Such rapidity suggests that projectile points were part of a weapon of vastly greater efficiency than previously known weapons. The occurrence of atlatl or spear-thrower foreshafts in Gypsum Cave, Nevada, at 8505 ± 340 B.C. makes it seem probable that this is the weapon involved.

Up until the last few years, it was believed that no Old World prototype existed for Clovis and Plano points. However, as the Palaeolithic stage in Asia becomes better known it seems less likely that Paleo-Indian technology can be explained as of New World origin. Muller-Beck (1966, p. 1207) has suggested that specialized hunting industries were developed in eastern Asia during a warmer interval between the first and second land bridge, and that when an entry to the New World opened about 28,000 years ago some of these hunters were pushed eastward by the pressure of expanding Aurignacian groups in Europe. In Muller-Beck's view, the leaf-shaped points and other bifacial tools that appeared at this time constitute an ancestral form from which the varying Paleo-Indian projectile types could have differentiated during the succeeding millennia that southern North America was isolated from the Old World by the maximum ice advance of the late Neopleistocene (see also Bryan, 1965). The difficulty with the latter part of this theory is that no sites with projectile points south of the glacial front date from the interval between 26,000 and 11,000 B.C. although the possibility exists that some of the undated finds may represent this time period.

A second possibility is that the Paleo-Indian projectile point types rapidly differentiated from a generalized Old World prototype introduced when the trans-Canadian corridor reopened during the final retreat of the glaciers some

13,000 years ago. (Hester, 1966.) Although this hypothesis requires acceptance of a more rapid rate of differentiation in projectile point types and of migration than the preceding one, it is consistant with the relatively slight time-lag between appearance of Paleo-Indian sites in the archaeological record in North and South America. At the present time, both alternatives can be fitted to the evidence, and a choice depends upon the relative weight given to the geological and archaeological data and upon theoretical considerations such as possible rate of cultural evolution. The way in which the problem is defined is also important. If the appearance of projectile points is believed to represent refinement of already existing hunting practices, independent evolution in the Old and New Worlds may seem theoretically probable. If projectile points of the Solutrean and Palaeo-Indian types reflect substitution of the atlatl or spear-thrower for a hand thrown spear, however, the probabilities of independent invention may be considerably reduced.

Whatever their origin, the makers of the Clovis fluted points appear to have selected as their ecological niche the lush grasslands and wooded valleys of the North American High Plains, which in the colder and wetter climate of that time were sprinkled with streams, ponds and marshes, and extended over a wider area than today. First discovered in the south-western United States, fluted points have since been found in every state. Many western sites are 'kill' sites, where mammoth, bison, camel and horse bones are associated with fluted points and tools used to dismember the carcasses and remove the hides. In the north-eastern United States, camp sites are more typical, and the cultural inventory includes objects of domestic use like bone awls, needles, spatulas, hammerstones and rubbing stones, as well as scrapers, knives, gravers and less formalized stone tools. Clovis projectile points typically range from 7–12 cm. in length, although specimens as short as 4 cm. have been found. Width is approximately one-third to one-quarter of the length, producing an elongated outline with nearly parallel to convex sides and a concave base. (Fig. 33.) Aberrant examples have slightly concave lower sides or an incipient stem. A channel or flute extending upward from the base for one-quarter to one-half the length is the diagnostic feature. This fluting finds extreme expression in the Folsom points, on which the major portion of each face is removed. Folsom points are more restricted both temporally and areally than the generalized Clovis type, which occurs not only throughout the United States but as far south as Guatemala. An incipiently stemmed variant (Fig. 33d) has been found in the Ecuadorian highlands, where a date from El Inga places it at 7080 ± 144 B.C. A similar form from near São Paulo, Brazil, has not been dated.

Lanceolate parallel-sided or convex-sided points with tapering or flattened base were also widespread during the Palaeo-Indian period. (Fig. 34.) These have been designated as the Plano variety, which is considered by some authorities to be the ancestral New World projectile point form. However, existing carbon-14 dates place it about 1,000 years later than the earliest Clovis

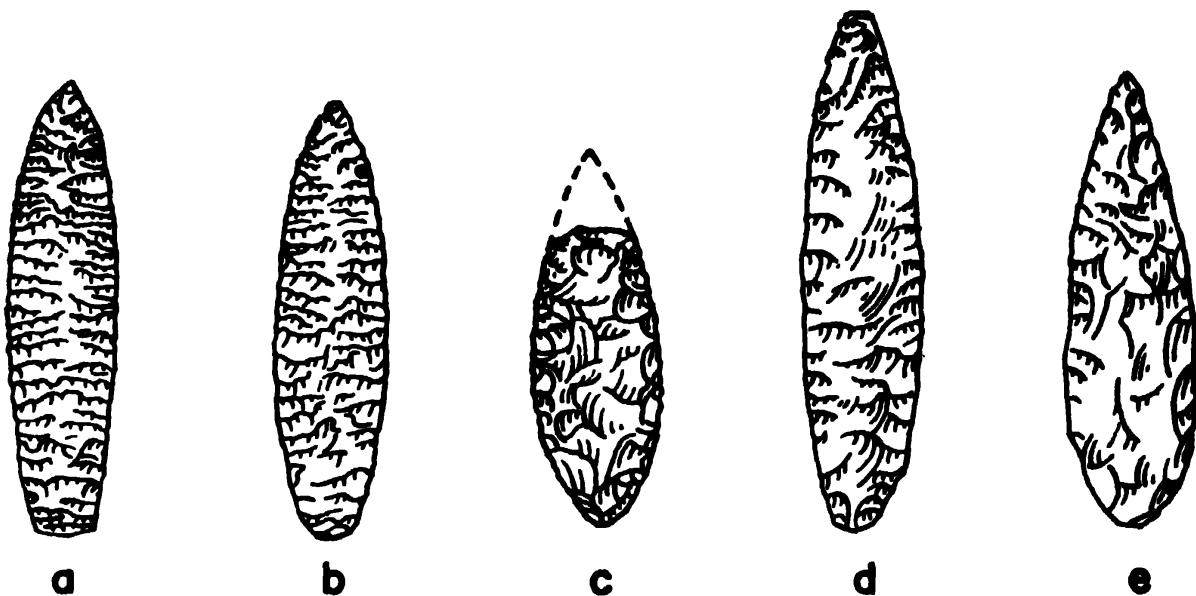


FIG. 34. Projectile points of the Plano type, showing regional variation of form, after Gordon R. Willey. a-b: Western United States; c: Central Mexico; d: El Jobo, Venezuela; e: Ayampitin, Argentina.

points. Either the Plano form spread with great rapidity or the initial dates in North America are too recent, since it is documented at the southern tip of South America by 8760 ± 300 B.C. It is also known from Venezuela, Ecuador and Peru. The fine parallel flaking reaches its most perfect expression in the Eden points of Wyoming, which have a very slight indentation at the lower edges suggesting a stem. Most of these points exhibit pressure flaking, whereas the Clovis type was produced principally by the percussion technique.

Until recently, corner-notched and other varieties of stemmed points were assigned by archaeologists to a later date than the fluted and lanceolate types. However, such forms are increasingly being found in contexts suggesting considerable antiquity, although the earliest carbon-14 date, obtained from the Modoc Rock Shelter in Illinois, is only 7992 ± 440 B.C. Bone projectile points also appear to be ancient, having been found in association with Clovis points at Blackwater Draw No. 1 (New Mexico), as well as in early contexts in South America, such as in the Lagoa Santa region. Their relative perishability compared with stone artifacts makes accurate assessment of their former frequency impossible.

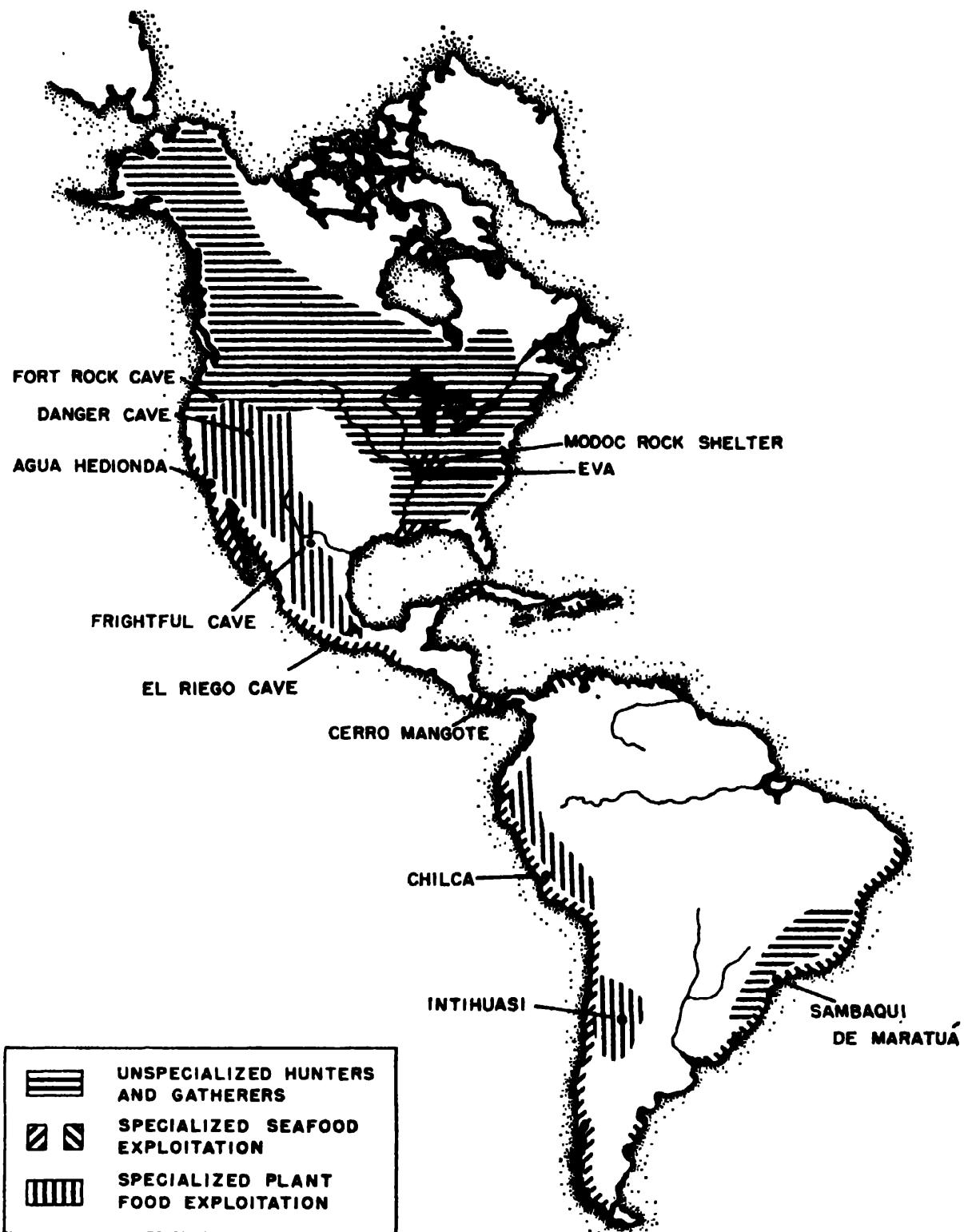
3. THE INTERMEDIATE PERIOD

As the glaciers withdrew for the last time to the north, the Clovis hunters followed the retreating tundra that was the habitat of their prey. With changing ecological conditions came extinction of Pleistocene megafauna, and big game hunting could no longer serve as a major source of subsistence. After about

8000 B.C., the environment began to resemble that of modern times, and diversification of ecological niches was accompanied by cultural adaptation to different kinds of resources. Three general types of subsistence pattern began to crystallize: (i) unspecialized hunting and gathering, (ii) specialized seafood gathering; and (iii) specialized plant food gathering. (Map XXVI.) Although these categories grade into one another, and support comparable levels of socio-political organization, they are worth distinguishing because they appear to have offered different possibilities for cultural evolution to a more complex level.

The unspecialized hunters and gatherers were the most widespread of the three subsistence patterns, constituting a generalized adaptation to the vast forest-covered stretches of both continents. In eastern North America, such cultures are placed in the Archaic which begins to emerge between about 7000 and 5000 B.C. Complexes with similar artifact inventories have been encountered in South America, where they are probably of comparable antiquity. An important innovation in stone-working technique finds its expression in the appearance of ground and polished artifacts, such as grooved axes, mortars and pestles. Bifurcate-stemmed stone projectile points are another diagnostic feature in North America, while in South America, a variety of small-stemmed forms is characteristic. The diet was composed of small animals, fish and wild plant foods in season. Summer camps were frequently moved, but accumulation of deep deposits in sheltered places such as caves suggests that in some regions the same camp site was reoccupied in successive winters. Stone drills, scrapers, knives and choppers, bone awls, various kinds of grinding stones for pigment as well as food preparation, and, where preservation has been good, sandals, basketry and other objects of perishable materials, give evidence of a way of life not significantly different from that of surviving hunters and gatherers in the Canadian sub-arctic or eastern Brazil (see pp. 947ff.,—932).

During the late Archaic, between about 2000 and 1000 B.C., the inhabitants of the Great Lakes area made many kinds of implements of copper as well as stone. More than 20,000 objects have been collected from the region extending from southern Saskatchewan through Minnesota, Wisconsin, and Michigan to Ontario. Copper was mined with stone tools, perhaps supplemented by fire and water, and worked by cold hammering and annealing. A great variety of artifacts was produced: tanged or socketed spear or projectile points, harpoons, adzes, celts, knives, chisels, spatulas, awls, needles, fishhooks, pikes, and beads. The origin of this industry has provoked considerable speculation, one school of thought attributing it to indigenous transfer to a new material of tool types and techniques of manufacture known for thousands of years, while another finds some of the tool types and hafting methods too similar to those in the Old World to have been independently invented. Whatever the origin, it is important to note that this is not metallurgy, because smelting, reducing, refining, casting and other techniques were unknown. The people of the 'Old Copper Culture' were simply Archaic hunters who made some of their weapons and implements from a special locally available type of 'stone'.



MAP XXVI

Beginning about 8000 B.C. in the semi-arid western United States, abundant wild plant foods began to be the focus of subsistence, although hunting of small mammals continued to play an important part in the diet. Sites representing this 'Desert Culture' are distributed over much of western North America, from Oregon down to central Mexico, in regions where acorns, piñon nuts, grass seeds, edible roots and berries provided an abundant annual harvest. Although South American sites of the Desert Culture are poorly known, excavations at Intihuasi cave in north-western Argentina attest to its presence by 6000 B.C. Hallmarks of this way of life are baskets for the gathering of seeds and berries, and milling stones for removing hard shells or pulverizing seeds into flour. The annual cycle was regulated by the seasonal maturation of seeds and fruits, and many groups probably followed a rather fixed schedule, moving from place to place to collect different types of wild crops as they came to maturity. In parts of the Great Basin, California and northern Mexico, this subsistence pattern remained viable until the end of the aboriginal period, and ethnographic accounts of the Paiute, Shoshone and other tribes whose material culture closely resembles that from ancient Desert Culture sites provide a glimpse of social and religious elements probably also little changed for thousands of years.

As wandering bands of foragers filtered over the continents, they may have initially paid little attention to the subsistence possibilities along the seashores. However, as hunting became less productive with extinction of horse, mammoth and other large mammals, the less readily exhaustible store of shellfish available along many portions of the Atlantic and Pacific coasts began to be exploited. Shell middens of fantastic dimensions on the coasts of Peru and Chile, southern Brazil and the eastern United States are mute testimony to the productivity of this subsistence resource. The fact that a permanent food supply could be obtained from a restricted area meant that small groups of people could lay aside their wandering existence. Although other kinds of wild plant and animal food continued to be exploited, and shellfish gathering may have been a seasonal activity in many areas, the shellfish gatherers could have been significantly more sedentary than contemporary groups dependent upon more transitory kinds of wild food resources.

Determination of the date when specialized shellfish gathering was adopted is complicated by fluctuation in sea level that took place during the terminal Pleistocene. Along eastern North America, for example, the shore was in some places 150 kilometres to the east of its present location when the ice sheet reached its greatest extent. Although differences in slope of the continental shelf reduce the amount of recently inundated land on the Pacific side, the present coastal configuration has an antiquity of only about 5,000 years. This situation may account for the clustering of the earliest dates for shell middens throughout the Americas: 5853 ± 150 B.C. for Sambaqui de Maratuá, Brazil; 5020 ± 300 B.C. for Chilca, Peru; 4850 ± 100 B.C. for Cerro Mangote, Panama; and 5320 ± 120 B.C. for southern California. The earliest date yet

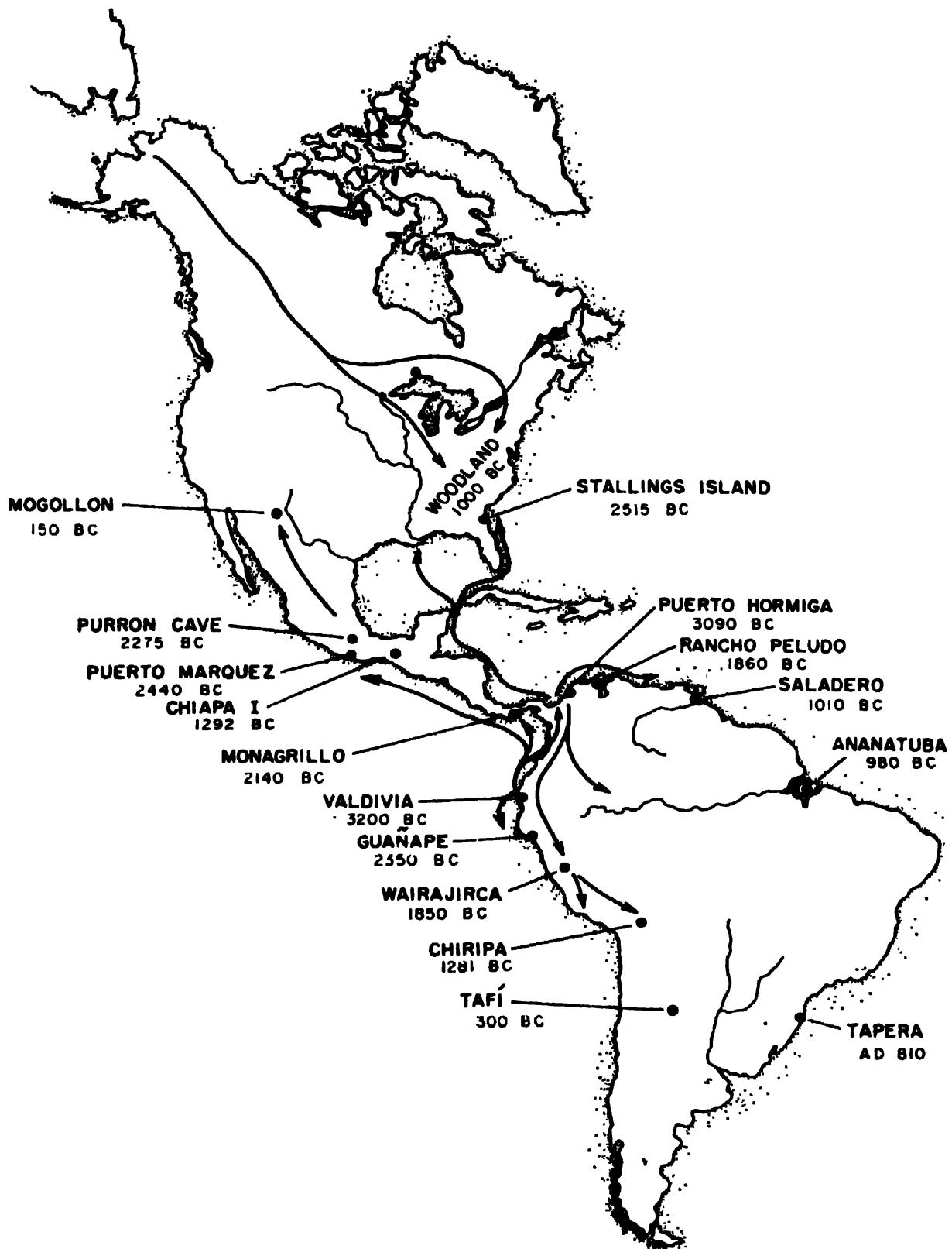
secured pushes back this way of life to 7070 ± 500 B.C. at Agua Hedionda in southern California. Exploitation of fresh-water shellfish is of similar antiquity, to judge from a date of 5200 ± 500 B.C. obtained from the Eva site on the Tennessee River. Whether watercraft was invented prior to this time has not been demonstrated, but the fact that deep-sea fish bones occur in shell midden refuse, and the existence of sites on Hispaniola one of the Greater Antilles, by 2610 ± 80 B.C., imply that it formed part of the cultural inventory of the shellfish gatherers.

Most shell middens are in areas of moist climate, and rainwater percolating through the shells has destroyed all but the most durable cultural materials. What remains consists principally of broken stones that must have served for scraping, cutting and pounding, fish or animal bones with sharpened ends for punching or perforating, and bits of shell fashioned into beads, small amulets or fishhooks. Polished stone implements occur in many sites, as well as peculiar stone objects of no obvious utility that may have had ceremonial function. The abundance of cordage, netting, basketry, matting, objects of wood, and plant remnants in coastal Peruvian sites indicates that the material culture of these people was considerably less impoverished than surviving remains usually suggest. Some of the earliest evidence of concern for the dead comes from shell middens, in the form of graves lined with red ochre and furnished with a few simple ornaments or tools.

4. INTRODUCTION AND SPREAD OF POTTERY MAKING

Shellfish are one of the few natural food resources of sufficient permanence and concentration to compete with agriculture as a basis for supporting settled life. Although shore dwelling communities of the Intermediate Period were not markedly larger than the bands of wandering hunters, sedentariness made possible accumulation of delicate or unwieldy objects that could not be readily carried about. Pottery fits into this category, and the fact that its earliest occurrence seems to be in such a context is not surprising. What is somewhat surprising is recent evidence that the idea of pottery making was introduced onto the Pacific coast of South America by inadvertent transpacific voyagers from western Japan. As will be seen later, this is not the sole source of New World ceramic traditions and the enduring significance of this event cannot yet be appraised. If the evidence has been correctly evaluated, however, it suggests that the Bering Strait was not the only route by which new cultural traits were introduced into the New World.

Pottery appears on the coast of Ecuador about 3200 B.C. as a major component of the Valdivia culture. (Map XXVII.) The earliest material is competently made and tastefully decorated, although thick walled. Vessels are large rounded bowls and small jars with slightly constricted or insloping upper walls. Surface treatment ranges from unpolished through incompletely



MAP XXVII

polished to lustrous, and a high proportion of vessels are red slipped on the exterior. A variety of decoration was produced by simple instruments such as a piece of shell, a sharpened stick or a finger drawn across or punched into the surface. Although Valdivia pottery incorporates no complicated vessel forms or techniques of decoration, it is clearly the product of a long tradition of ceramic development. While our knowledge of New World prehistory is still far from complete, the outline now beginning to take shape leaves no gap into which such an evolution could fit. On the other hand, across the Pacific on the Japanese island of Kyūshū, pottery dated at around 3000 B.C. not only closely resembles that of the Valdivia culture, but can be traced back over several thousand years to increasingly primitive forms.

The makers of Early Middle Jomon pottery in Japan lived either along the coasts or in the mountain valleys. The coastal inhabitants were shellfish gatherers and fishermen, like the contemporary shore dwellers in the New World, and their general level of social and cultural development was very similar. An important difference was that pottery had been in use since about 7000 B.C. From an original simple conical-based, vertical-walled all-purpose container, decorated with incised, rouletted or cord-marked designs, there developed a variety of more complicated bowl and jar forms and more elaborate techniques of decoration. This gradual evolution is clearly preserved in an archaeological record composed of hundreds of Jomon sites. The contrast between this long record and a blank in the New World prior to the appearance of Valdivia pottery, the striking comparability between the ceramic complexes on the two sides of the Pacific, and the coincidence of the initial Valdivia dates with the dates for pottery with the same characteristics in Japan, lead to the conclusion that the two occurrences must be of common origin. An introduction via an overland route across the Bering Strait is unsupported by any evidence. On the other hand, the presence of bones of deep-sea fish in Jomon sites, as well as the discovery of several dugout canoes of Jomon age, attest to the fact that these early fishermen ventured far from shore. The modern Polynesians possess the knowledge required to survive for weeks on the open sea, and the Jomon fishermen can be credited with similar skills and endurance. Such a craft, if blown far from land by a storm and left to the mercy of winds and currents, would have been propelled across the northern Pacific and down along the coast of the New World. The jutting shore line of Ecuador marks the end of this route; failing a landing here, a drifting craft would be borne again westward across the Pacific. Such a journey might have required close to a year, and all of the original occupants may not have survived. However, at least one survivor is required to account for the elements characterizing the original pottery of the Valdivia culture. Such a survivor would have found the coastal Ecuadorians living very much as his own people had on the coast of Japan, except that containers of perishable materials were the only type known. The newcomer knew how to make pottery, and taught the Ecuadorians the vessel shapes and decorative techniques and motifs with which he was familiar. So

apt were the pupils that they soon equalled or even surpassed the products of their contemporaries in Japan.

When the diffusion of this ceramic tradition is followed along the New World coasts, an irregular pattern emerges. (Map XXVII.) Although in part this may reflect gaps in information, the coasts of Peru and Venezuela are well enough known to suggest that other factors are involved. Valdivia-like pottery has been found at Puerto Hormiga on the north coast of Colombia, where it is dated at 3090 ± 70 B.C., only about 100 years after the earliest available Valdivia date. However, at Rancho Peludo, only a short distance to the east, pottery first appears more than 1,000 years later, and another 1,000 years elapsed before knowledge of pottery making reached the mouth of the Orinoco, at the site of Saladero.

The earliest pottery in North America also comes from shell middens. A date of 2515 ± 95 B.C. has been obtained with carbon-14 analysis of fibre-tempered ware from Stallings Island on the Georgia coast, and the origin of this complex has long been a puzzle to archaeologists. Recently, the incised and punctuated decoration has been shown to bear a striking resemblance to that of the Valdivia tradition (Ford, 1966), and a South American derivation has been proposed. Once again, it is relevant to note that small craft caught off the Central American or northern South American coast would have been transported by the Gulf Stream to exactly those portions of the Florida and Georgia coasts where the ceramic resemblances occur.

Little attention has been paid to shell middens along the Pacific shore of Mexico and Central America, but pottery from Puerto Marquez has been carbon-14 dated at 2440 ± 140 B.C. A slightly more recent date of 2140 ± 70 B.C. has been obtained for the Monagrillo site in Panama. Diffusion to the south, on the other hand, appears to have been remarkably slow. The earliest pottery on the north Peruvian coast is that of the Guañape complex, dated no earlier than 2350 ± 200 B.C., and at Hacha on the southern coast, it is 1,000 years more recent. Since associated cultural traits were introduced, the failure of pottery making to be adopted earlier on the Peruvian coast cannot be attributed to absence of knowledge of its existence. Perhaps the greater ease of manufacture and nearly equal serviceability of gourd containers, which abound in the refuse of preceramic sites, forestalled adoption of other kinds of containers.

5. DOMESTICATION OF PLANTS

For pottery making to spread to the interior, the prerequisite was sedentary life. Except in rare areas where permanently productive wild food resources existed, this could only come about after the development of agriculture. The presence of pottery in the refuse of Purron Cave in the Mexican highlands by 2275 ± 190 B.C. and at the site of Kotosh in the central Peruvian highlands by 1850 ± 110 B.C. implies that the cultivation of plants had progressed

sufficiently in these regions to sustain small settled communities. Subsequent to this time, agriculture and pottery making may have spread together to outlying areas. However, their origins and early histories are independent, and tracing the development of New World agriculture requires returning to about 8000 B.C., when retreating glaciers and extinction of megafauna produced a new set of ecological conditions to which man was obliged to adapt.

The process by which man gradually began to exercise control over his food supply by the domestication of plants and animals is still largely a matter of speculation. Most New World cultigens are different species from those of Old World origin, but we do not yet know whether their domestication was the independent result of a similar series of incidents that led man to recognize the potential rewards of improving on nature, or whether the idea was spread from a single world centre and applied to local plants. Even within the New World, it is not yet certain whether the initial steps toward agriculture that can be detected on the Peruvian coast were independent of those in Mesoamerica, or were stimulated by Mesoamerican contact. In fact, the only real certainty is that the period of incipient domestication was a long one, and the effects of this new food source on population size and socio-political organization were gradual rather than revolutionary.

One of the arguments against an independent origin for New World agriculture is the fact that the earliest cultivated species, the bottle gourd (*Lagenaria*), has no known wild ancestor in the Americas. Remains of rinds occur archaeologically in northern Mexico in the period between 7000 and 5000 B.C., and are present after about 5000 B.C. on the coast of Peru. This is an inedible plant, cultivated for its bottle-shaped fruits useful as containers. Another important New World domesticate, cotton, also has Old World antecedents. Although the Mexican and Peruvian cultivated species are different (*Gossypium hirsutum* in Mexico and *G. barbadense* in Peru), both are 26 chromosome hybrids. One ancestor is a 13 chromosome Old World species and the other a 13 chromosome New World species. The manner in which this hybridization came about is disputed. Some botanists favour a natural cross at a time when the plant had an unbroken distribution from the Old to the New World, long before man appeared on the scene. Others suggest a natural or artificial (i.e. man-carried) transoceanic introduction of seeds, the progeny of which then crossed with a wild New World relative. The latter hypothesis receives some collateral support from the fact that a transpacific contact appears to have brought the knowledge of pottery making to the Ecuadorian coast at about the time that cotton first appears in the Peruvian archaeological record. However, the nearly simultaneous appearance of a different hybrid in Mexico is difficult to explain by either hypothesis.

Even if Old World influence is accepted to account for the domestication of these two plants, it would not necessarily rule out the independence of New World subsistence agriculture. Both the bottle gourd and cotton are inedible, and the concept of assisting nature to provide a more adequate food supply can

be envisaged as the outgrowth of a gradually increased knowledge of plant lore and a series of lucky accidents, such as favourable mutation or natural hybrids. Recent intensive investigations in Mexico under the leadership of MacNeish have revealed a gradual transition lasting several millenia, leading from full dependence on wild foods to primary dependence upon agriculture, that gives every appearance of being an indigenous process.

The initial steps appear to have been taken between 7000 and 5000 B.C., when the extinction of Pleistocene megafauna and changes in climate altered subsistence resources. In the Mexican highlands, where edible wild plants were numerous and varied, the return per unit of labour expended in gathering probably equalled or exceeded that from hunting. A plant-gathering subsistence imposed restrictions on the size and sedentariness of the population: only when certain seeds and fruits were ripe could families that foraged alone in leaner times of the year temporarily remain together. Even under the best conditions, however, such bands probably did not contain more than six to eight families. On the coast, where edible plants could be supplemented by shellfish and other sea food not seasonally restricted in its productivity, bands of this size could remain permanently together in small villages along lagoons and river banks. In the highlands, on the other hand, where an early frost, an unusually dry summer or some other vagary of nature threatened survival, simple measures began to be taken to increase the reliability of the harvest. Just what they were may never be definitely known; but loosening the soil and occasional watering of wild plants, planting of a few seeds, or simply leaving part of the crop unharvested as seed for the next year's supply, and measures practised by some primitive peoples today. In any case, it is estimated that at Tehuacán between 5000 and 3000 B.C. about 10 per cent of the diet was derived from semi-domesticated plants such as maize, peppers, beans, squash and avocado, and the greater security of the food supply is reflected in both increased band size and longer periods of sedentariness. A thousand years later, domesticated plants composed 30 per cent of the diet. During the interval between about 3000 and 2000 B.C., agriculture spread to the lowlands, where sedentary life had long been supported by the resources of the sea. The resulting bounty may partly explain the rapid elaboration of religious and ceremonial activity, most notably represented by the large temple structures and sophisticated art style of the Olmec on the Veracruz coast. A few centuries later, when more intensified agriculture allowed an equivalent degree of settled life in the highlands, ceremonial centres and other types of public construction begin to appear on a large scale there also. From this time onward the highlands forged ahead and the record of cultural advance culminating with the Aztec empire was written mainly there.

The period of incipient agriculture is less well known in South America. However, on the Peruvian coast it begins several thousand years later than in Mexico, and the earliest domesticates include a Mexican species of squash (*C. moschata*) pointing to Mesoamerican influence. (Chart 5.) Once acquired,

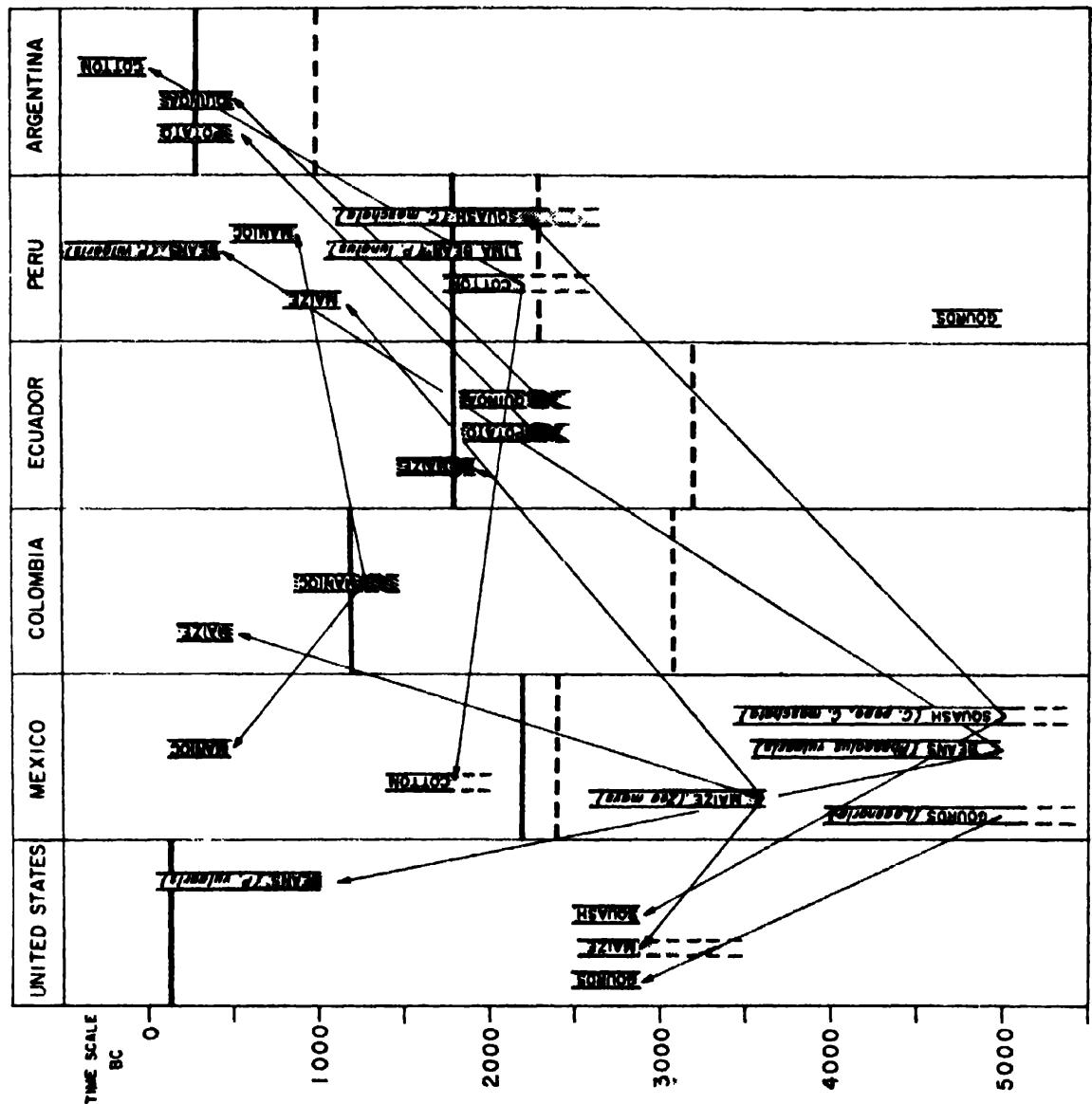


CHART 5. Antiquity and diffusion of major cultivated plants

the idea was soon applied to local wild plants such as the lima bean (*Phaseolus lunatus*). The situation in the Andean highlands is hypothetical, but the circumstances surrounding the domestication of the potato and quinoa probably parallel in a general way the history of maize and beans in Mexico. Before 2000 B.C., highland agriculture had become sufficiently productive to support sedentary life, and as was the case in Mesoamerica, the first evidence of well-developed ceremonialism makes its appearance about this time. Manioc may have been the last of the major New World food plants to be domesticated, but its history is so poorly known that any statement about its origin is almost pure speculation.

Maize (*Zea mays*), which became the principal staple over much of the New World as well as the most important ritual plant, was relatively late to be domesticated. Its origin was the subject of speculation and controversy for decades during which Mexico, Paraguay and nearly all the countries in between were proposed as places of origin. The true story was revealed in 1961 by the work of MacNeish in dry cave deposits in the Tehuacán valley of south-central Mexico. Not too surprisingly, MacNeish found that the wild ancestor of maize was a primitive maize, which became extinct under competition with its domestic offspring at a relatively early time. Centuries of cultivation and selective breeding increased the size of the cobs from an original length of under two centimetres and deprived the plant of ability to reproduce without human aid. It also produced a large number of varieties, differing not only in size, colour and subsistence properties, but also in adaptability to different conditions of moisture, temperature, soil and length of growing season. The importance of the development of specialized races is evident in the archaeological record. Although maize reached the south-western United States about 3500 B.C. and was introduced to the Peruvian coast by 1200 B.C., there was no observable cultural impact. However, in both areas the subsequent introduction of better adapted varieties was followed by marked advances in cultural development.

6. GEOGRAPHICAL DIFFERENCES AND NEW WORLD CULTURAL DEVELOPMENT

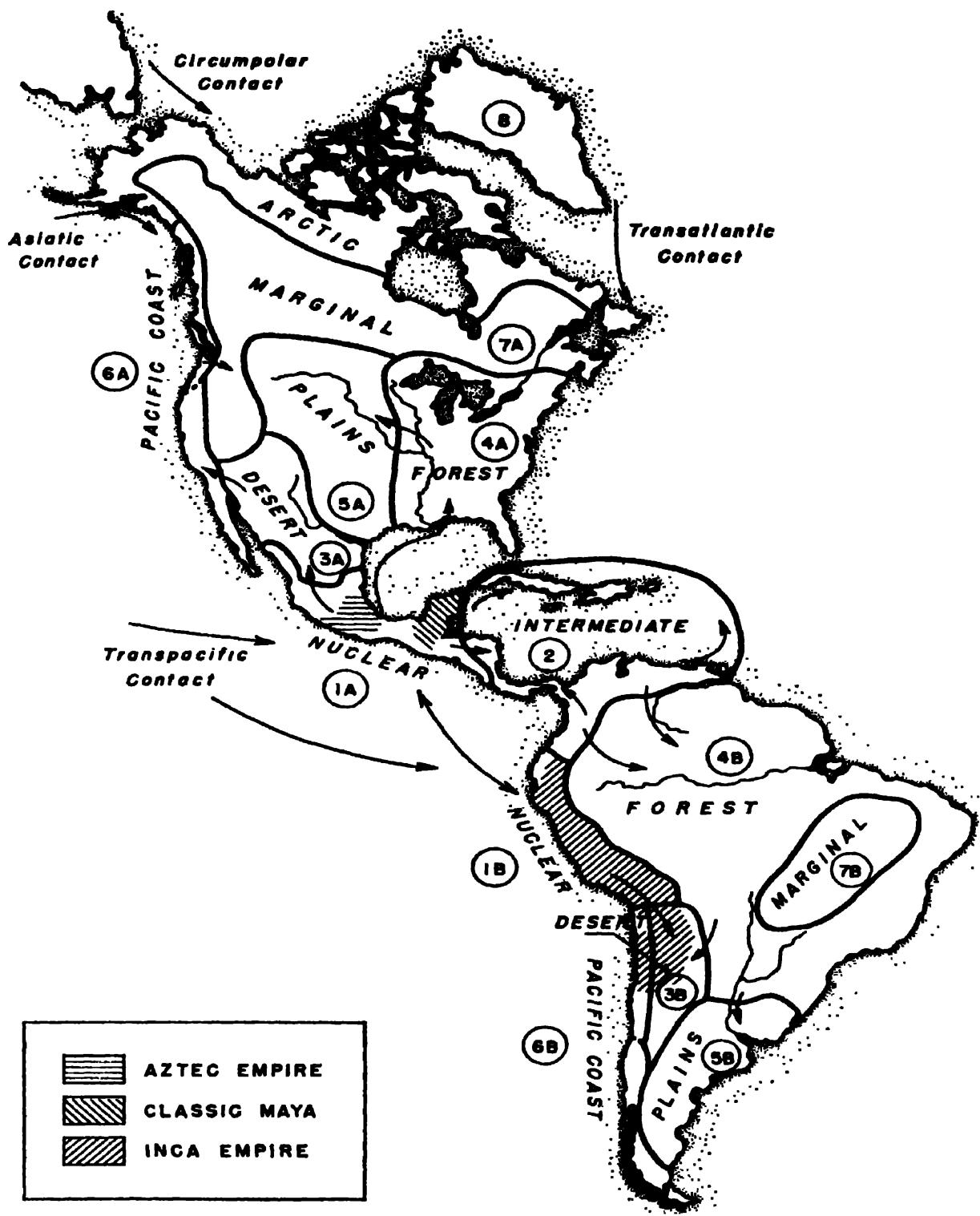
Although the details of the process by which it was achieved remain shrouded in uncertainty, there can be no doubt that the domestication of food plants has been man's most important accomplishment. The first significant consequences are evident about 2000 B.C., when structures of obvious ceremonial function appear almost simultaneously in both Mesoamerica and the Andes. From this time until the Spanish Conquest, these two areas were the setting for new inventions and discoveries, and for new kinds of socio-political integration and religious observances. Although parallel in general features, the cultural content of the two areas is so different in detail that an expert rarely has difficulty in distinguishing between objects of Mesoamerican and Andean

origin. The exceptions are elements that reflect communication between these primary centres, for it is now certain that there were not two independent foci of New World civilization; rather, there are two principal expressions of a single interrelated rise. From Mesoamerica and the central Andes, influences spread to the far corners of the continents, in some cases rapidly, but in others with almost incredible slowness. In the varying environments, new traits mingled with older ones and with innovations from other sources, giving rise over the millenia to distinctive constellations of cultural traits. The most general of these 'culture areas' are ecological in character, and reflect the interplay of cultural and environmental factors over a long period of time. Boundaries between areas are typically ill-defined in nature, and cultural frontiers are also zones of transition although they appear as sharp lines on a map. (Map XXVIII.) The climax culture of each area is distinctive, however, and tracing of its development helps to illuminate New World prehistory as a whole.

Because most New World anthropologists are specialists in either North or South America, traditional culture areas reflect the special geographical characteristics and detailed ethnographic information of the continent for which they were designed. If the western hemisphere is viewed as a whole, however, it is evident that environmentally similar regions exist both north and south of the Isthmus of Panama, and furthermore, that these regions have produced comparable cultural adaptations through time. The present summary will take advantage of this situation to trace New World prehistory. Description will begin with the Nuclear Area, composed of Mesoamerica and the central Andes, which attained the level of civilization in pre-European times. The other culture areas will be reviewed in the approximate order of their decreasing cultural complexity, beginning with the Intermediate or Circum-Caribbean region, followed by the Deserts, the Forests, the Plains, the Pacific Coasts, and the Marginals. In each dichotomy, the North American area is the better known archaeologically, and will be described first. Only the Arctic has no South American parallel. The attempt will be made to isolate the principal factors that contributed to the way in which cultural development was channelled in each pair of areas until the time the process was disrupted by the arrival of European explorers and colonists in the sixteenth and seventeenth centuries.

7. THE NUCLEAR AREAS

A wide variety of habitats favourable to human exploitation coexist in two places in the New World. One is Mesoamerica, anthropologically defined as the region between northern Mexico and central Honduras and Nicaragua; the other is the Andean Area, extending from central Ecuador to southern Peru and Bolivia. In both the cordilleras diverge to create intermontane basins of temperate climate, drained by non-navigable rivers running through deep tropical gorges. The higher elevation of the Andean basins is compensated by



MAP XXVIII

their lower latitude. As a result, Cuenca in the south Ecuadorian highlands, with an average annual temperature of 13.9°C, is comparable to Mexico City with an annual average of 15.20°C. Annual rainfall averages are also of similar magnitude: 862 mm for Cuenca and 500–1,000 mm for Mexico City. The eastern mountain slopes, extending to the sea in Mesoamerica and to the Amazon Basin in South America, are covered with dense tropical forest, while the western lowlands suffer from aridity. This juxtaposition of ecological zones with differing resource potentials for human exploitation is believed to have been a significant factor in the initiation of the process of plant domestication, and to have catalysed the adoption of those forms of social integration prerequisite to the development of civilization (Palerm and Wolf, 1961).

Although the ecological ingredients are generally similar, they are combined in the two Nuclear Areas in different proportions and arrangements. Mesoamerica tends to be a patchwork of mountains, basins, and valleys, bordered by swampy lowlands. Semi-deserts, parklands, scrub forests, savannas and vast expanses of tropical forest provide habitats for the most diversified mammalian fauna in the New World. Of the available animals, deer and rabbits were most often exploited for food. At certain seasons, lakes and lagoons provided migratory waterfowl in abundance. Perhaps the most significant aspect of Mesoamerican geography is the relatively gradual nature of transitions in elevation, temperature and rainfall. The result is variety without sharp contrast, facilitating diffusion of cultural elements from their place of origin to other parts of Mesoamerica.

In the Andean Area, environmental zones are larger and extremes are more marked. True deserts of barren sand on the coast contrast with perennially dripping cloud forests high on the eastern slopes of the cordillera. A few kilometres from frigid highland plains are deep, narrow gorges filled with tangled tropical growth. Subsistence techniques suitable in the highlands are not equally applicable on the coast, and vice versa. Vegetation is particularly sensitive to differences in elevation, temperature and moisture between highland and lowland environments, a factor that became more significant culturally with the onset of plant domestication. As a consequence, plants cultivated in one zone were not as easily transplanted to another as in Mesoamerica. The Andes had an advantage, however, in the existence of animals suitable for domestication, and the llama and guinea pig began to play an important rôle in the economy in the early Formative period.

A. Mesoamerica

During the millennium between 2000 and 1000 B.C., the pattern of village life prevailing in rural Mesoamerica today was established throughout the highlands and on the Veracruz, Chiapas and Guatemala coasts. The products of agriculture were supplemented by hunting, gathering and fishing. Shallow flat-bottomed bowls and globular jars (*tecomates*) of pottery, came into general

use and were decorated with red rims and zones of brushing, punctuation or rocker stamping. Small solid pottery figurines were used in curing or other kinds of ritual, and then discarded to accumulate by the thousands, in village refuse. Throughout the area, the beginnings of formal ceremonialism are evident in the appearance of earth platforms on which temples were constructed of perishable materials. The breakdown of village independence can already be observed in the incorporation of raw materials and finished products of distant origin into the local economy, foreshadowing more formal political and religious integrations of later times.

This 'Formative' period of Mesoamerican civilization reached its climax between 1500 and 1000 B.C. in the Olmec culture of the Veracruz coast. Here, on islands in the swamps, dense vegetation has been torn away to reveal symmetrical arrangements of large ceremonial mounds, monumental stone carvings, and quantities of exquisitely worked jadeite amulets, celts, beads and earplugs. Elements of Olmec art and religion spread throughout the central Mexican highlands and as far south as the Guatemalan coast during succeeding centuries, exercising so strong an influence that the Olmec have been characterized as the 'mother civilization' of Mesoamerica.

Unfortunately, little is known of the socio-political organization and settlement pattern that developed and sustained the ceremonial centres. The existence at La Venta of earth platforms as large as 120 by 70 metres at the base and 32 metres high, arranged in a systematic plan around plazas, implies the availability of a large labour force and of planners and supervisors to direct it. The highly formalized and exquisitely executed art style of Olmec stone carving attests the existence of trained craftsmen, while transportation of stones weighing up to 50 tons from a source 100 kilometres or more from the place where they were erected indicates mechanical and engineering knowledge of some sophistication. The significance of the giant basalt human heads is unknown, but Olmec religious art in general revolves around the were-jaguar, which combines feline and infantile human aspects, and is believed to represent a rain god. The drooping mouth is a hallmark of Olmec art, along with elegant simplicity. (Fig. 35.) The collapse of the Olmec ceremonial centres in the last centuries before the beginning of the Christian era is as mysterious as their origin. One might speculate, however, that the conservative tendencies of a highly structured religion may have prevented social or economic alterations necessary to cope with changing conditions. Although strangled on the Veracruz coast, adjustments were successful in other parts of Mesoamerica, and a series of impressive Classic developments was the result.

Teotihuacán, on the north-east edge of the Valley of Mexico, was already a planned city covering some 7.6 square kilometres by around 300 B.C. Platform ceremonial mounds and plazas were surrounded by closely spaced rectangular dwellings, courtyards, storerooms and other domestic and public structures of varying size. (Fig. 36.) By A.D. 300, the city had grown to cover more than 18 square kilometres, and the ceremonial buildings were correspondingly more

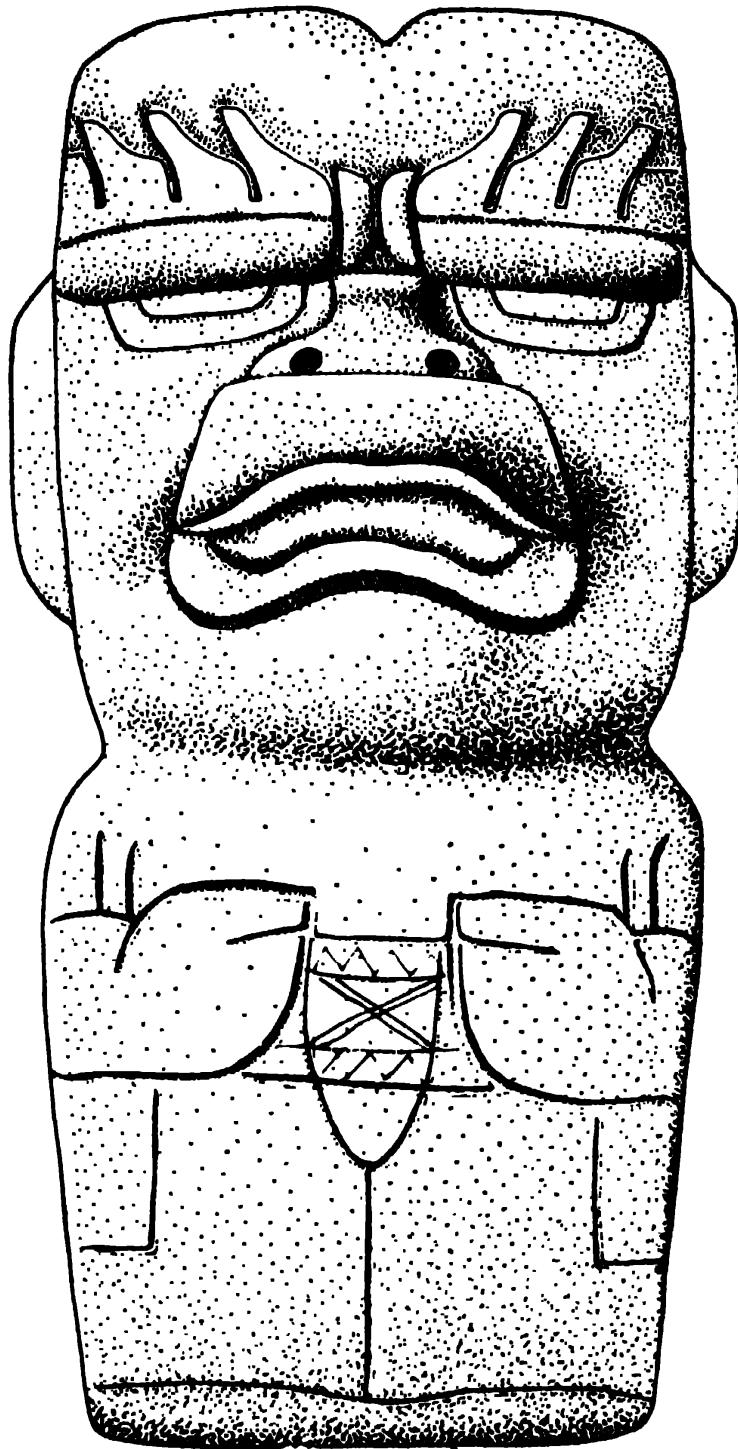


FIG. 35. Ceremonial stone axe with carving in typical Olmec style (after Michael D. Coe. Height 29·5 cm.

magnificent. The tremendous Pyramid of the Sun, 210 metres square at the base and 64 metres high, dominated the ceremonial sector. (Pl. 55 a.) Temples and palaces, built around courtyards, had porticoes with square columns ornamented by bas-relief, and plastered inner walls decorated with brilliantly

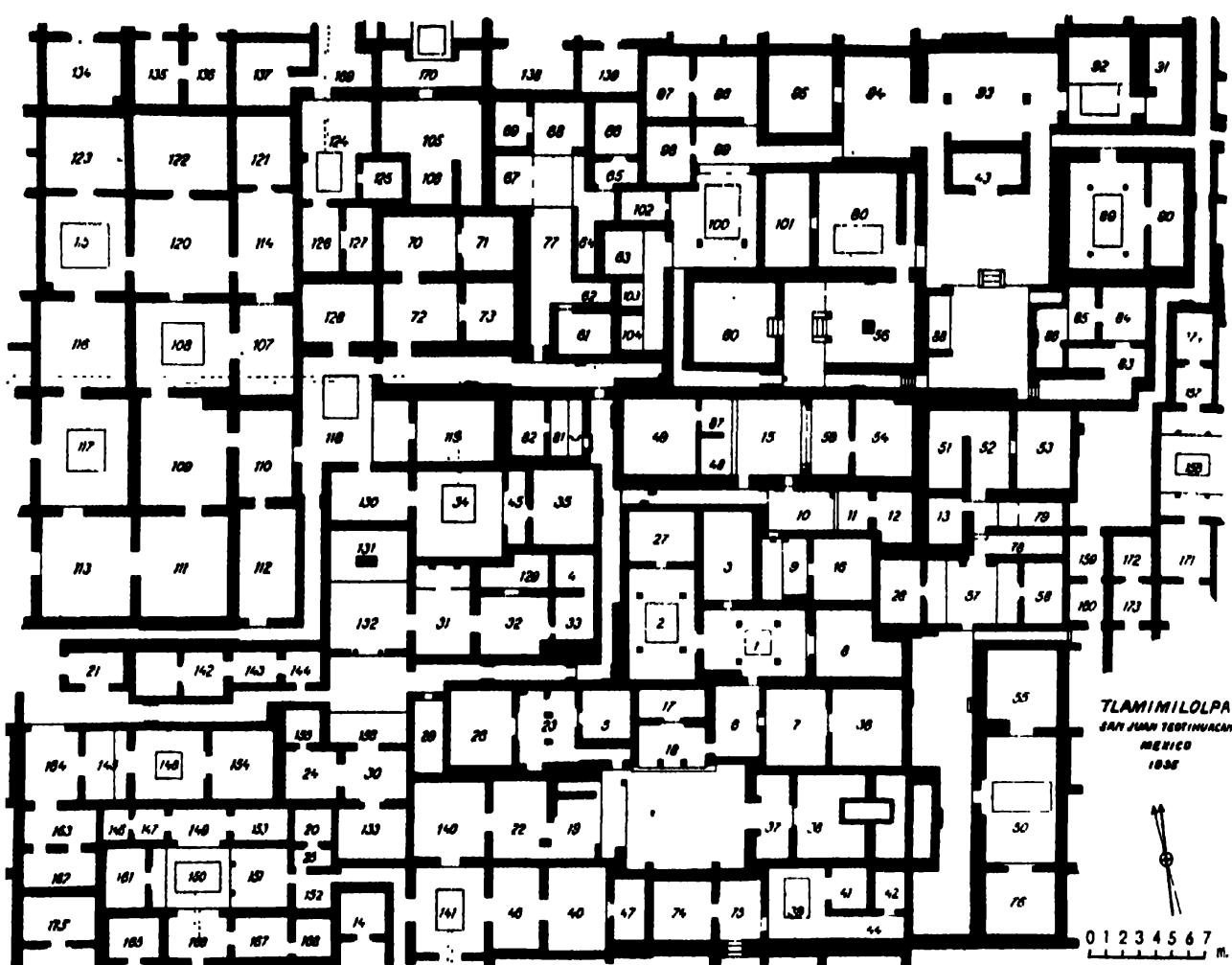


FIG. 36. Portion of the residential area of the city of Teotihuacán (after Gordon R. Willey).

painted murals of prowling jaguars (Pl. 55 b) or deities with flamboyant costumes and red fingernails. During the next three hundred years, Teotihuacán dominated central Mexico and exerted political, religious, commercial and artistic influence as far south as Guatemala. Around A.D. 600, it was suddenly destroyed, and the blame is put on the northern 'barbarians', who, like the Germanic tribes that subdued Rome, succeeded in overwhelming their settled neighbours grown confident by the comforts of civilized life.

About the time that Teotihuacán began its elaboration, similar trends were occurring in southern Mesoamerica, which reached their culmination in Maya civilization. The roots of the Maya are numerous and dispersed, and the origin of some of the most significant cultural elements is still unknown. It is now evident, however, that many arose outside what later became the Maya area. The earliest inscriptions are on Stela 2 at Chiapa de Corzo in central Chiapas, dated 9 December 36 B.C. by the Martinez-Goodman-Thompson correlation between the Maya and Christian calendars, and Stela C at the

Olmeo site of Tres Zapotes, with a reading of 31 B.C. Many specific elements of Maya art are foreshadowed in the Izapan style, which flourished on the southern Guatemala coast around the beginning of the Christian era. Writing was well developed and the complicated Calendar Round was functioning here and in the Guatemala highlands several centuries prior to their first appearance in the lowland Maya area. Earthen pyramids constructed at Kaminaljuyú near Guatemala City contain rich tombs of individuals of exalted status, the contents of which reveal a high development of ceramics, stone carving and more perishable arts; as well as hinting to the wealth and prestige of the ruling class. Around A.D. 300, the highland Guatemala sites went into a decline. A century later there was a brief renaissance, which architectural innovations and tomb contents indicate to have been the result of influence from the northern city of Teotihuacán. This ended, however, with the fall of Teotihuacán about A.D. 600, and leadership passed to the now flourishing lowland Maya centres.

The Classic Maya sites were not cities, but rather ceremonial and administrative centres. Small low mounds, the platforms on which thatched huts of the common people were erected, were scattered over the landscape, clustering where farm lands and fresh water were available. At certain times of the year, the populace of the 'sustaining area' gathered in the plazas and courtyards of the ceremonial centres to take part in rituals and pageants, and probably also to exchange produce and gossip. The largest of the Classic centres is Tikal, in south-eastern Yucatán, an impressive assemblage of platforms, plazas, pyramids, causeways and reservoirs. Having learned to build a corbelled arch, the Maya could top their pyramids with permanent buildings, whose massive appearance was mitigated by a soaring roof comb. (Pl. 58a.) The six steep-sided pyramids with their superimposed temples at Tikal are the tallest Maya structures, the largest measuring seventy metres from the plaza level to the roof-comb top. Looming far above the crown of the forest, they must have been an awe-inspiring ritual setting. A parallel might be drawn with the cathedral towns of Medieval Europe, to which peasants of the surrounding countryside brought their labour and produce, and where the pageantry and grandeur of religious events brought a touch of glory into the daily routine. To judge from the archaeological remains, however, Maya ceremonies were more magnificent than Christian ones by far.

Details of the social organization that maintained the great ceremonial centres are dimly perceived, but the Maya penchant for decorating temple walls (Fig. 37), stelae, wooden panels and pottery vessels with an array of sculptured and painted scenes provides a vivid impression of the magnificence as well as the brutality of Maya existence. The priests and rulers wore head-dresses of long emerald-green quetzal feathers, richly ornamented cloth garments, intricately laced sandals, and heavy jade necklaces, armlets, pendants and ear ornaments. (Fig. 38.) They sat on thrones surrounded by retainers, and were transported on elaborate litters in processions along the elevated

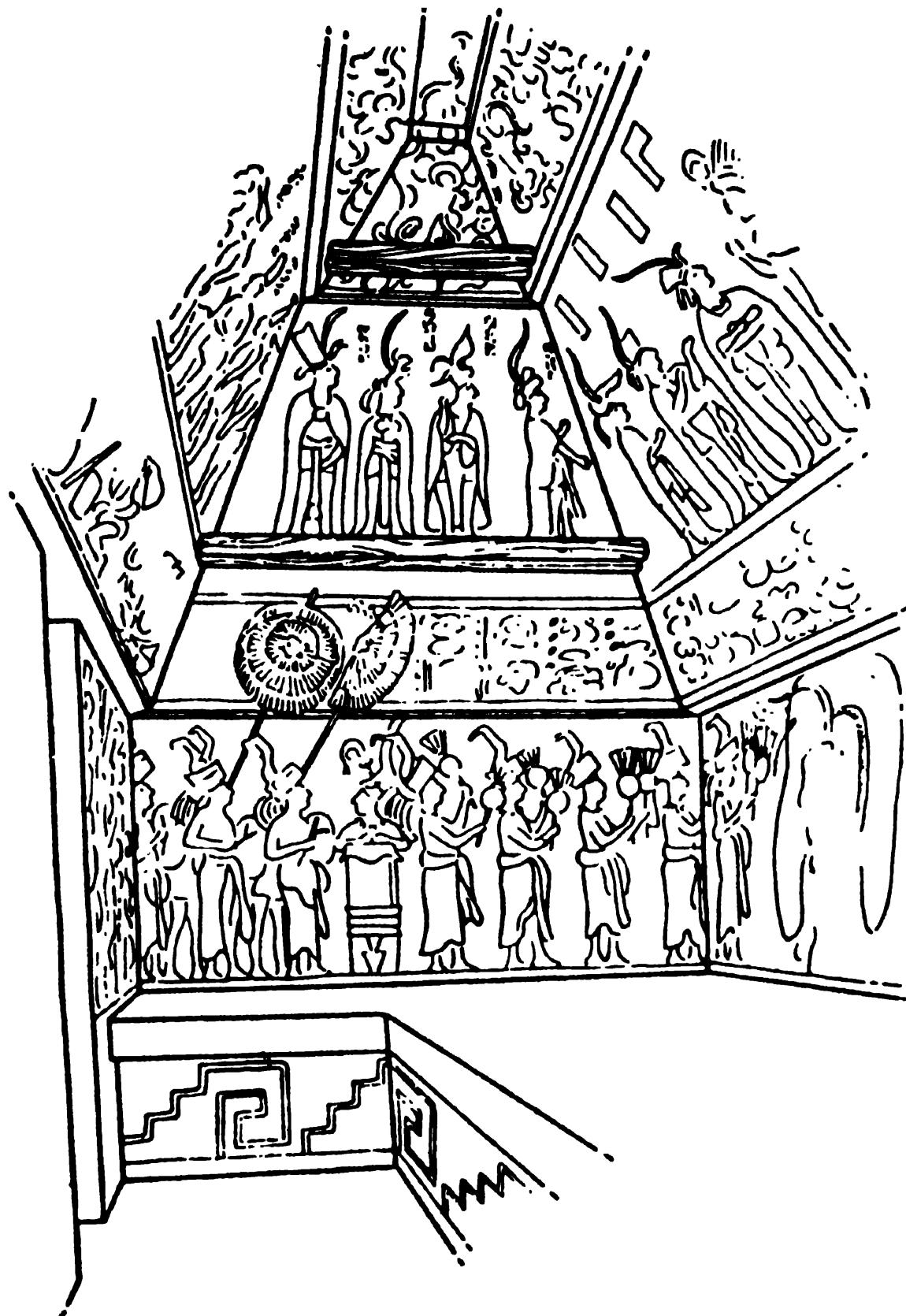


FIG. 37. Interior of a building at the Maya site of Bonampak with painted murals on walls and ceiling (after Carnegie Institution of Washington).



FIG. 38. Bas-relief at the Maya site of Yaxchilán (after Gordon R. Willey).

causeways that connected pyramids and palaces. In spite of exalted status, however, their destinies—like those of their subjects—were controlled by the gods, and a vast store of astrological lore based on complicated calendrical cycles, numerological manipulations and day associations was built up in the effort to influence or deduce the divine will. The mural paintings also make it clear that warfare was very much a part of the Maya way of life.

Among unique Maya features is the written calendrical record, spanning the period between the earliest and latest dated stelae, or A.D. 292-889. The custom of erecting dated monuments on designated occasions provides both an historical record unique in the New World, and detailed information on Maya methods of keeping track of time. The key unit was a 52-year cycle known as the 'Calendar Round', consisting of two intermeshing cycles of days, one of which was in turn composed of two cycles. (Fig. 39.) The latter, sometimes referred to as the 'tzolkin', had a length of 260 days, representing the time required for the permutation of 13 numbers with 20 signs through all successive combinations. Simultaneously, a count was kept through 18 months of 20 days each, or 360 days. With the addition of 5 unlucky days, this closely approximates the 365½-day solar year. Each Maya day thus had a double designation: (i) the number and sign of the 'tzolkin' calendar; and (ii) the day and month of the solar calendar. It required 18,980 days, or 52 years, for the complete permutation of these two cycles, or the completion of the 'Calendar Round'. The termination of each 52-year interval was a time of apprehension,

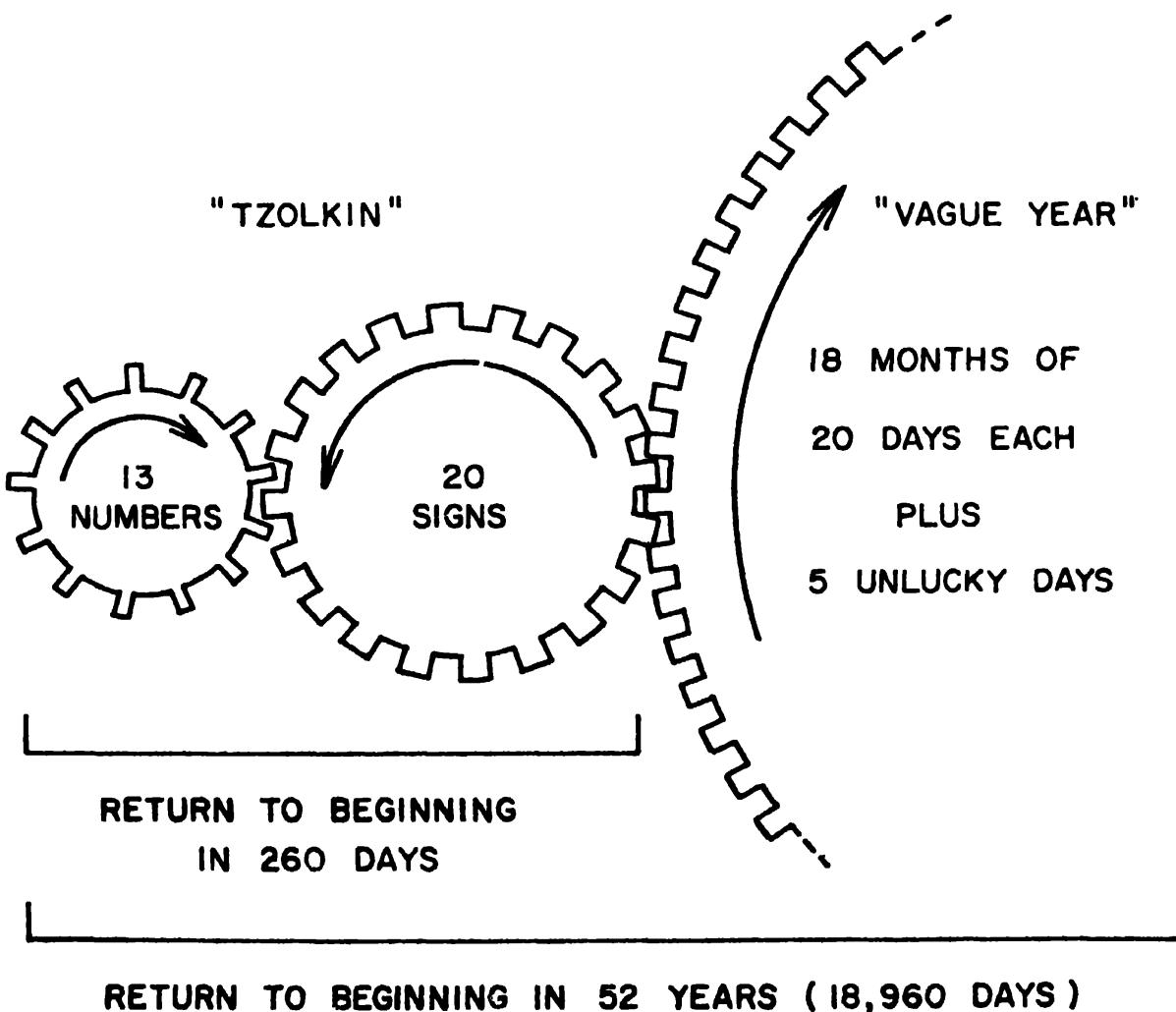
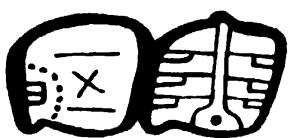


FIG. 39. Composition of the Mesoamerican 'Calendar Round'.

since it was not considered inevitable that another cycle would begin. When it did, cooking fires were rekindled, monuments erected and pyramids enlarged, accounting for the successive building stages characteristic of Maya ceremonial structures.

Keeping such close track of time would have been impossible without writing and mathematics. Numbers were written by combining two simple symbols, a bar (worth 5) and a dot (worth 1), with a system of place values, increasing vigesimally from bottom to top. There was also a symbol for zero, so that a number of any size could be written without difficulty, and addition and subtraction could be easily performed. To reduce the ambiguity of calendrical dates, special signs for periods of designated length were employed, and discovery of their significance has permitted reading of the calendrical portions of Maya inscriptions. The remaining texts have evaded decipherment until the last few years, when a significant breakthrough was made by a Russian epigrapher, Yuri Knorosov. Although his findings have not won universal acceptance, he suggests that the Maya glyphs represent syllables or sound combinations rather than letters, with ideograms added where necessary to remove ambiguity. Since many syllables are consonant-vowel combinations, and Maya words frequently end in a consonant, the reading of a glyph depends upon its position in a word. (Fig. 40.) The problem of decipherment is further complicated by incomplete knowledge of the language spoken by the Classic



cu-tz(u)
turkey



tzu-l(u)
dog



cu-ch(u)
burden

FIG. 40. Translation of three words according to Knorosov's decipherment of Maya writing (after Michael D. Coe).

Maya. Enough progress has been made, however, to indicate that Maya inscriptions will before long give up whatever secrets they may possess.

Around A.D. 900, Maya magnificence came to an end. Great Classic centres like Tikal, Copan and Quirigua were abandoned, the erection of calendrical monuments ceased, and the population appears to have suffered a marked decline. Why this occurred is one of the most intriguing mysteries of New World archaeology, and innumerable explanations have been proposed. Many, such as warfare, insurrection, social unrest, loss of confidence in the priests, and refusal to pay tribute to the temples, are more likely to be secondary than primary causes. All periods of cultural crisis are characterized by social unrest, rebellion against authority, and fighting, but what causes these? It is doubtful

that the Maya rulers understood any better the real forces at play than do the rulers of modern nations faced with hostile student organizations, crime waves, and civil unrest, but at bottom the cause must have been primarily economic. A large and steady food surplus was required to support the ruling class, which in turn maintained the complicated calendrical system and its vast associated ritual and supernatural lore. Anything that affected the food supply would have sooner or later affected the hierarchy. The environment of the Maya area has relatively low agricultural potential, and it may not have been equal to the growing cultural demands. If over-exploitation exhausted the subsistence resources, it would be neither the first time nor the last that man has paid a severe price for failure to recognize and adapt to forces of nature.

The fact that the Maya constitute the only civilization of antiquity to occupy an exuberantly tropical environment, and possess numerous cultural elements unique to the New World but widespread in Asia, has caused speculation about transpacific influences. Although some authorities still deny such a possibility, a growing body of literature attests to the importance of the problem. The resemblances cited are comparable in number and complexity to those used to postulate cultural connections between the Valley of Mexico and the Maya area, or between Mesoamerica and the Andean area, and it is clear that opposition to the idea of diffusion stems principally from the width of the ocean that separates South East Asia from Mesoamerica. In the context of world cultural evolution, close parallels of independent origin are rare even in material objects, where form is limited by function; in mythology, cosmology, calendrical associations, art motifs, deity attributes, insignia of rank, and similar free constructs of the human imagination, the probability of independent invention of a similar constellation of traits is infinitesimal. To suggest that the Classic Maya were stimulated by learning brought across the Pacific is in no way to diminish the significance of their achievements. It does, however, make them easier to incorporate into the outline of world history that is now beginning to emerge.

Contemporaneously with the Classic Maya decline, another people rose to prominence in the north. These were the Toltec, whose capital was Tula, some 60 kilometres north of the Valley of Mexico. In traditional Mesoamerican fashion, this city was composed of a series of ceremonial plazas surrounded by platform mounds. A novel architectural feature was the use of stone columns to support wooden beams and a flat roof. (Pl. 56a.) Some were anthropomorphic, depicting Toltec warriors equipped with atlatls (spear throwers), darts and shields. Friezes with jaguar, coyote, eagle and skull motifs decorated the walls of public buildings. During its brief florescence, Tula exerted influence as far south as the Guatemala highlands. In Yucatán, Toltec conquerors injected new life into the fading Maya Post-Classic civilization. At Chichén Itzá, they recreated their colonnaded temple at Tula on a grander scale (Pl. 56b) and introduced the feathered serpent, the reclining human or 'chacmool' altar, and numerous other religious elements and beliefs. After the destruc-

tion of Tula, about A.D. 1160, Chichén Itzá remained a centre of Toltec influence. Shortly after A.D. 1200, however, it too had been abandoned. (Pls. 57 b; 58 b.)

The last great Mesoamerican civilization was that of the Aztec, a primitive 'barbarian' tribe that settled on the small islands of Lake Texcoco in the middle of the fourteenth century and grew in a few decades to dominate most of Mexico. This rapid rise is testimony to strategic skill and military organization, and it is not surprising that military orders honoured prowess in war during life, and that warriors were elevated to a special heaven after death. Each newly conquered tribe was required to provide tribute to the capital of Tenochtitlán, to support the growing requirements of the ruling class; and the incorporation into the empire of regions with varying natural resources and occupied by tribes with different specialized skills, must have stimulated elaboration of the already ancient Mesoamerican system of commerce and markets. Conquest was also the means of obtaining the large supply of human victims required to ensure the benevolence of the powerful Aztec gods.

The centre of this empire was Tenochtitlán, a city of causeways and canals, plazas and markets, pyramids, temples, palaces, shops and residences, that began on the islands where the Aztec tribesmen first settled and swelled outward to the nearest margins of the lake. At the time of the Spanish Conquest, its population was an estimated 200,000, and it was of such impressive proportions that, in the words of the *conquistador* Bernal Díaz del Castillo: 'those who had been at Rome and at Constantinople said, that for convenience, regularity, and population, they had never seen the like' (1927, p. 178). The same author vividly describes the city as it appeared in 1519, when it was in its heyday:

'... in this great city . . . the houses stood separate from each other, communicating only by small drawbridges, and by boats, and . . . they were built with terraced tops. We observed also the temples and adoratories of the adjacent cities, built in the form of towers and fortresses, and others on the causeway, all whitewashed, and wonderfully brilliant. The noise and bustle of the market-place . . . could be heard almost a league off. . . . When we arrived there, we were astonished at the crowds of people, and the regularity which prevailed, as well as at the vast quantities of merchandise. . . . Each kind had its particular place, which was distinguished by a sign. The articles consisted of gold, silver, jewels, feathers, mantles, chocolate, skins dressed and undressed, sandals, and other manufactures of the roots and fibres of nequen, and great numbers of male and female slaves, some of whom were fastened by the neck, in collars, to long poles. The meat market was stocked with fowls, game, and dogs. Vegetables, fruits, articles of food ready dressed, salt, bread, honey, and sweet pastry made in various ways, were also sold here. Other places in the square were appointed to the sale of earthenware, wooden household furniture such as tables and benches, firewood, paper, sweet canes filled with tobacco mixed with liquid amber, copper axes and working tools, and wooden vessels

highly painted. Numbers of women sold fish, and little loaves made of a certain mud which they find in the lake, and which resembles cheese. The makers of stone blades were busily employed shaping them out of the rough material, and the merchants who dealt in gold had the metal in grains as it came from the mines, in transparent tubes, so they could be reckoned, and the gold was valued at so many mantles, or so many xiquipils of cocoa, according to the size of the quills. The entire square was enclosed in piazzas, under which great quantities of grain were stored, and where were also shops for various kinds of goods' (1927, pp. 176-8).

Aztec society was stratified, with the semi-divine ruler at the top of the hierarchy, followed in descending order by nobles and high priests, commoners, serfs and slaves, the latter being prisoners of war. The supernatural world was similarly stratified. Tlaloc, the Rain God, shared prominence with Huitzilopochtli, God of War, whose blood-spattered temple and altar, on which burned a pan containing incense and three human hearts, horrified the Spaniards. Social organization, however, was still fundamentally kinship organized, and integrating mechanisms of the type developed by the Inca Empire of Peru were weak or absent. Powerful groups like the Tarascans, Mixtecs and Tlaxcalans were never completely subdued, creating enclaves of disloyalty that made the empire vulnerable. The Spaniards were quick to recognize this situation and to capitalize upon it to bring about the Aztec downfall in the year A.D. 1519.

B. The Andean Area (Map XXVIII, Area 1B.)

Settled life began on the Peruvian coast while subsistence was still based on wild foods, especially the abundant resources of the sea. The aridity of the climate has preserved evidence of arts, crafts and daily life not directly observable in most other parts of the New World, at such an early period, including willow twig brooms, cactus combs, spindles with whorls of seeds, wooden bowls and trays, mats and baskets, fishline and other types of cord, slings, bags, belts, nets and twined fabrics of wild reed or cactus fibres, some with fringes and tassels, others ornamented with openwork or transported warp or weft patterns. Semi-subterranean stone-walled houses provided shelter at night, and tangible manifestations of developing ceremonialism appear in the form of platform mounds. In the highlands, settled life lagged behind until plant domestication was sufficiently advanced to provide some degree of subsistence security. Between 2000 and 1000 B.C., however, the highlanders were living in stone-walled houses, building temples and manufacturing pottery on a scale similar to that on the coast. Although emphasizing different species of domesticated plants and distinct in detail, the general level of cultural development was very comparable to that in contemporary Mesoamerica.

Between 1000 and 800 B.C., the first of a series of cultural waves passed over

the Andean area. This is reflected in the Chavín horizon, characterized by a distinctive art dominated by condors, serpents and fanged cats, often depicted in highly abstract, stylized form. (Fig. 41.) From its centre of development in the north Peruvian highlands and coast, diagnostic elements of Chavín art diffused southward beyond Ayacucho in the highlands and as far as Paracas on the coast by 300 B.C. Chavín culture offered new food not only for the soul, but also for the body. At this time, manioc and several Mesoamerican domesticates, including avocado, squash, and a higher yielding type of maize, make their appearance. Added to local staples such as quinoa, potato and lima bean, these significantly enlarged the productivity of agriculture. The consequence was an

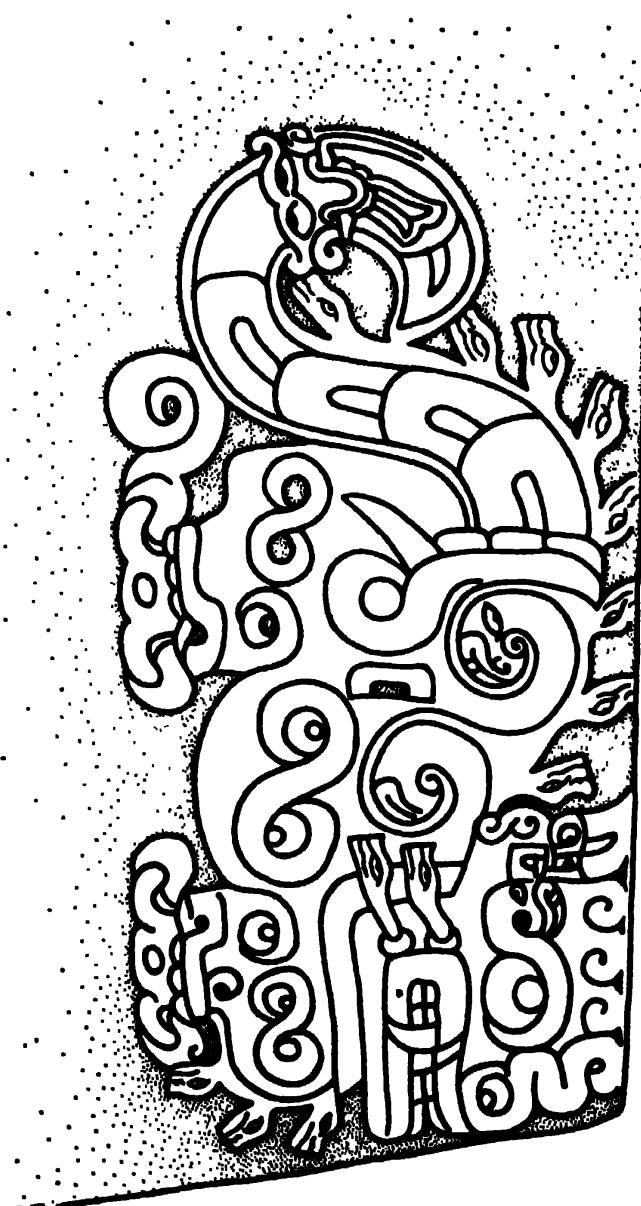


FIG. 41. Typical Chavín-style feline from the cornice of a temple at the site of Chavín de Huantar (after Julio C. Tello).

increase in the number of settlements, elaboration of ceremonial constructions, and the manufacture of luxury goods in the form of jet mirrors, finger rings, exquisitely made pottery, and stone sculpture. Although different in stylistic expression, Chavín art incorporates so many elements present in the earlier Olmec art of Mesoamerica as to raise the question of relationship between the two.

If specific features of Chavín art and religion are attributable to influence from Mesoamerica, local antecedents also played a very strong rôle. As was true throughout New World prehistory, new ideas could be accepted only after local development had reached a suitable level to receive them. About 800 B.C., subsistence resources were secure enough to support settled life on a scale that not only permitted, but probably required, elaboration of ceremonialism. Agriculture is everywhere in primitive society subject to the vagaries of natural forces, and until the acquisition of scientific knowledge and technology, these were believed to be under supernatural control. Increased dependence on agriculture consequently led to increased efforts to influence the gods. Religious elements introduced from Mesoamerica would have been integrated into locally developing traditions, becoming modified in the process. Because of such modification, the archaeologist cannot always be certain whether he is confronted with diffusion or parallel development, and in the Chavín-Olmec case too little is known of the antecedents of both complexes to pass final judgment at the present time.

It is quite certain, on the other hand, that a significant Mesoamerican influence reached the coast of Ecuador about 1500 B.C., marking the inception of the Chorrera culture. Highly polished, thin-walled pottery with new kinds of decoration and vessel shapes appears at this time, along with delicate ceramic 'napkin-ring' ear spools and thin obsidian blades, all of which are older in Mexico. More striking is the change in settlement pattern; whereas earlier pottery-making groups clung to the coast, Chorrera sites occur along the rivers of the Guayas basin. This implies a significant improvement in the productivity of agriculture, and although direct evidence has not yet been found, it is highly probable that it reflects the acquisition of maize. Both maize and the new ceramic features can be traced into the southern Ecuadorian highlands, and from there to the Peruvian coast. In Peru, the distinctive religious elements were added that resulted in the Chavín culture. Although these diffused widely toward the south, no evidence has yet been found of either the ceremonial structures or the art style in Ecuador.

The dispersal of Chavín culture, with its improved subsistence resources, technological advances in pottery making, stone working, metal working and probably perishable arts, and its more formalized religion, acted as a catalyst to local developments. Increased village size and elaboration of ceremonial structures are evident throughout the Peruvian coast, and by the beginning of the Christian era, the climax of population expansion had already been reached. Political integrations, corresponding to states or kingdoms, were

rising in both north and south. Of these, the Mochica Empire is best known because of the extensive pictorial record left in its ceramic art. (Pl. 60, a, b, c.) Flora and fauna of economic or religious significance (sixteen kinds of fish, thirty-five kinds of birds, sixteen kinds of animals) were modelled with such realism that species can be identified, while myriad details of daily and ceremonial life, fishing and hunting, warfare, dress, music and dance, insignia of rank, and even the disfigurements of disease or accident, are realistically depicted. This marvellous documentation shows that many practices in existence at the time of the Conquest were already present, including litters to transport individuals of rank (Fig. 42), runners to carry messages, and military organization. Also evident are 'barbarous' customs later abandoned, such as the taking of head trophies in warfare, prevalent throughout the Andes at this time. (Pl. 59.)

The Mochica culture originated in the northern coastal Peruvian valleys of Chicama and Moche, and at its peak was a multi-valley state exerting influences as far south as Casma. Sites composed of thousands of rooms or houses attest to the urbanization of life, although planned arrangement is not yet evident. Large pyramids occur in urban centres or independently, as do hill-top fortifications that loom up from mountain spurs. The Huaca del Sol in Moche valley is the largest single construction in pre-Spanish Peru. Built entirely of mould-made adobe bricks, it consists of a huge platform 228 by 136 metres in basal dimensions and 18 metres high, with terraced sides and a causeway leading up to the north end. The pyramid on the southern summit



FIG. 42. A Mochica dignitary travelling in a litter (after Rafael Larco Hoyle).

is 103 metres square and 23 metres high. Also typical by this period are extensive irrigation canals, which brought under cultivation 40 per cent more land area than is utilized today. Although we can only postulate socio-political concomitants of such material remains in most other New World areas prior to the arrival of Europeans, here the vivid scenes on pottery vessels show us rulers and slaves, warriors and captives (Fig. 43), priests and deities, artisans and fishermen. Elaborate head-dresses, woven garments, gold ornaments, carved staffs, mirrors inlaid with shell and turquoise, and numerous other objects found in graves can be observed in use. We therefore know that society was highly stratified and that Mochica art and architecture were spread by military conquest and political consolidation.



FIG. 43. An elaborately costumed Mochica warrior leading a nude prisoner by a rope around his neck (after Alfred Kidder II).

In the highlands, meanwhile, other developments were taking place. By A.D. 600, the Tiahuanaco culture was at its peak in the Titicaca Basin. The principal site, twenty-one kilometres south of Lake Titicaca, consists of a group of platforms and sunken courts surrounded by dwellings. Blocks weighing 100 tons were brought from quarries at least five kilometres away, to be trimmed and fitted into walls with precision not exceeded by the more famous Inca masons of later times. Joints were strengthened by copper cramps, and lintels were ornamented with bas-relief. Here, as on the coast, metallurgy was well developed. Gold and silver plaques, masks, cups and other luxury items were reserved for use of the upper class, but copper and bronze knives and axes may have had wider circulation. Tiahuanaco decorated pottery was typically painted in black and white on a well-polished red surface with geo-

metric patterns incorporating highly conventionalized pumas, condors and serpents as well as anthropomorphic figures. The rigidity and angularity of these patterns, which has caused their comparison with textile designs, are typical of Tiahuanaco art, whether in pottery, stone, wood or cloth.

Between A.D. 800 and 1000, Tiahuanaco influence was felt the length and breadth of the Peruvian coast, and into northern Chile and Argentina. Whether this reflects military expansion, religious proselytizing or simply popularity of the art style is a matter still under discussion. The more orderly arrangement of rooms in high walled compounds that becomes characteristic of urban centres of this period, especially on the north and central coast, may reflect Tiahuanaco influence. There is also an increase in intensity of urbanization, and it is estimated that at least 50 per cent of town populations were now involved in activities unrelated to subsistence.

By A.D. 1000, regionalism was again in the ascendency. On the north coast, the Chimu Empire expanded over the general area of earlier Mochica supremacy. The principal city, Chanchan, near the modern city of Trujillo, covers eighteen square kilometres and had a population estimated at some 50,000. Ten large units surrounded by nine-metre high walls of adobe bricks contain streets, houses, pyramids, cemeteries and even garden plots and stone-lined reservoirs. The entire lay-out is a planned arrangement of rectangular units of varying size. (Pl 61 a, b.) Chimu arts and crafts show the effects of mass production. Although the stirrup spout jars of Mochica times remain common, they are typically monochrome and decoration as well as form is mould-made. The decline of pottery as an artistic medium reflects the substitution of metal objects as symbols of status and wealth. Dress is another outlet for conspicuous consumption, and textiles consequently remained a vehicle for artistic expression. Because of the paucity of pictorial art, the Chimu Empire remains more shadowy than its Mochica predecessor. However, the relatively slight amount of Inca influence on this portion of the Peruvian coast attests to its cultural solidarity, as well as to the efficiency of its governmental and military organization.

To the north, on the coast of Ecuador, similar expansionistic tendencies can be discerned in the archaeological remains of the late period. After about A.D. 500, regional cultures began to melt into larger territorial units roughly coinciding with major ecological zones. In contrast to the coast of Peru, where rivers draining from the highlands intersect at right angles with the shore to create a series of habitable areas of similar ecological composition, the Ecuadorian coast is divided between a littoral strip and an interior basin drained by a network of southward flowing rivers. During the late period, this geographical division led to the emergence of two distinct cultures, one adapted to the interior fluvial environment, and the other to the open sea. Ecuadorian coastal waters are among the world's best fishing grounds, and exploitation of this subsistence resource led to skill in navigation and ultimately to pre-eminence of the Manteno in coastwise trade. Pizarro's first expedition southward from

Panama in A.D. 1525 encountered a large raft off the northern Ecuadorian coast, which was loaded with produce including crowns, diadems, beads, bracelets and other metal ornaments, belts, armour and breastplates, small tweezers, bells, and a quantity of textiles of wool and cotton 'intricately worked with rich colours of scarlet, crimson, blue and yellow and every other colour, in a variety of techniques and figures of birds and animals and fish and small trees' (Sámanos, 1844, p. 197). Since the Manteño, like their Chimu neighbours to the south, did not leave a pictorial record on their ceramics, and since the climate of the Ecuadorian coast is hostile to the preservation of objects of perishable materials, early Spanish accounts like this one provide valuable evidence of aspects of Manteño culture that are poorly documented in the archaeological remains.

The archaeological record is more complete for the Milagro culture of the Guayas basin, which is represented by large earth mounds constructed for habitation and cemetery use. The existence of hundreds of low house platforms and many large ones of ceremonial significance implies a considerable population, and differences in the quantity and quality of grave offerings reflect marked social stratification. Metallurgy reached full elaboration in the production of elegant gold and silver ornaments encrusted with turquoise beads, and a variety of copper ornaments and tools, including axes, knives, chisels, tweezers, needles and fishhooks. The few textile fragments that have survived show skill in the manipulation of the tie-dye technique equal to the best achievements in Peru. A number of new traits are of Mesoamerican origin, among them the use of ornamental inlay in the front teeth and of thin axe-shaped copper plates as a standard of value. Whether the Milagro culture represents an empire comparable to those to the south, or a looser kind of socio-political integration, is not known; however, it is a matter of record that although the Inca subjugated the inhabitants of the highland basins, they were unsuccessful in attempts to expand their dominion over the Ecuadorian coast.

The Inca, who developed one of the most remarkable political organizations that has yet graced this earth, began as humble highland farmers and llama herders. Prior to about A.D. 1438, their domain was a small area in the vicinity of Cuzco; by A.D. 1470, they ruled supreme from Quito to Lake Titicaca, and twenty-five years later their frontiers extended from southern Colombia to central Chile. (Map XXVIII.) Control over an empire with a horizontal extension of some 5,200 kilometres, and an altitudinal variation of 4,000 metres was maintained by systematic application of ingenious administrative measures, which incorporated several elements ancient in Andean culture. For example, the Inca relay runners, who could bring fresh fish from the seashore to the dining table of the emperor in Cuzco in two days, and transmit a message the length of the empire in fifteen days, are a refinement of messengers depicted on Mochica pottery vessels. The famed Inca highways, with staircases and tunnels chiselled out of solid rock, suspension bridges crossing streams and gorges, and rest houses for official travellers at regular intervals, are fore-

shadowed by less extensive road systems of earlier times. The closely fitted stone masonry that is the hallmark of Inca architecture has its antecedents in Tiahuanaco stone construction. The litter in which the emperor travelled, and other accoutrements of rank were also prerogatives of earlier Mochica rulers. (Fig. 42.)

What apparently was new, and what made possible a stable political integration of such magnitude in the absence of communication more rapid than the human leg and more permanent than the human memory, was a set of astute administrative procedures that effectively eliminated the possibility of revolution, and superimposed loyalty to the state over traditional regional loyalties. Upon voluntary surrender or forceful conquest of a new area, one or more of the following procedures was put into effect: Local chiefs were incorporated into the administrative bureaucracy at a rank concomitant with the number of their subjects. (Fig. 43.) Some of their sons were taken to Cuzco to be educated with those of the Inca nobility, a measure that ensured both their own indoctrination and the good behaviour of their fathers. Local images and their attendant priests were also brought to Cuzco, thus incorporating them formally into the state religious hierarchy. The official language, Quechua, and the state religion were made mandatory; the highway was extended, storehouses and other governmental buildings were constructed; local resources were appraised as a basis for levying tribute; and if resistance was severe or prolonged, populations of whole villages were removed to distant parts of the empire and replaced with loyal subjects familiar with the procedures and requirements of existence under Inca administration. This political superstructure, which gave Inca culture its uniqueness, has left little mark on the archaeological record. The translocation of populations is evident in the appearance in southern Ecuador of pottery vessels of typical Cuzco style, and traces of Inca roads and buildings are preserved, but settlement pattern, tools and utensils, pottery vessel shapes and techniques of decoration more often continue ancient local traditions. A major factor in the success of Inca administration was the ability to recognize which local customs could be allowed to persist and which were a threat to political solidarity.

The Inca administrative system was simple in conception and derives its complexity from the magnitude of the population to which it was applied. Geographically, the empire was divided into four quarters, each of which in turn was divided into successively smaller units, ideally containing 10,000, 5,000, 1,000, 500, 100, 50 and 10 heads of families. Other groupings were made on the basis of sex and age, each category having well-defined duties and privileges. A special group of officials kept census records up to date, so that when labour was required for construction, mining, the army or some other activity, the manpower available in each region was easily ascertained. Taxes were paid in produce or in labour, and when absence from home was required, support was provided from public warehouses. Records of tremendous volume and variety were kept without the use of writing. The only aid to memory was the

quipu, a cord from which were suspended a series of strings with knots arranged so that their position and complexity could be translated into numbers. (Fig. 44.) The product being counted, the storehouse or region to which it referred, and other details had to be remembered, and special accountants were charged with this task.

The vast quantities of provisions that supported the civil and religious hierarchies, the corvée labour, the professional artisans and the armies were obtained by a form of taxation levied on the ayllu, which was the minimal administrative unit, composed of kin. The land holdings of each ayllu were divided into three parts, one for the emperor, one for the Sun, and one for the ayllu members. The produce collected in excess of normal requirements was stored in warehouses throughout the empire to be withdrawn in time of need, whether to supply the army or the corvée labour, or to relieve famine caused by natural disaster. This official redistribution took the place of the trade and market system so highly developed in Mesoamerica.

The heart of the empire was the capital of Cuzco, a cosmopolitan city with public buildings of great beauty and wealth, and bustling crowds made up of people with heterogeneous origins from near and distant provinces. When Cieza de León saw it, thirty years after the Conquest, it was still an impressive sight:

'There were long streets, although noticeably narrow, and the houses made all of stone . . . skilfully joined (Pl. 62 b) . . . The other houses were all of wood, thatch, or adobe. . . . In many parts of this city there were splendid buildings of the Lord-Incas where the heir to the throne held his festivities. There, too, was the imposing temple to the sun . . . which was among the richest in gold and silver to be found anywhere in the world. . . . This temple had a circumference of over four hundred feet (122 metres), and was all surrounded by a strong wall. The whole building was of fine quarried stone, all matched and joined, and some of the stones were very large and beautiful. No mortar of earth or lime was employed in it, only the pitch which they used in their buildings, and the stones are so well cut that there is no sign of cement or joinings in. In all Spain I have seen nothing that can compare with these walls. . . . It had many gates, and the gateways finely carved; halfway up the wall ran a stripe of gold two handspans wide and four fingers thick. The gateway and doors were covered with sheets of this metal. . . . There was a garden in which the earth was lumps of fine gold, and it was cunningly planted with stalks of corn that were of gold. . . . Aside from this, there were more than twenty sheep of gold with their lambs, and the shepherds who guarded them, with their slings, and staffs, all of this metal. There were many tubs of gold and silver and emeralds, and goblets, pots, and every kind of vessel all of fine gold. . . . In a word, it was one of the richest temples in the whole world.'

'As this was the main and most important city of this kingdom, at certain times of the year the Indians of the provinces came there, some to construct



FIG. 44. An Inca accountant with a quipu (after Feline Guamán Poma de Ayala).

buildings, others to clean the streets and districts, and anything else they were ordered. . . . And as this city was full of strange and foreign peoples, for there were Indians from Chile, Pasto, and Cañari, Chachapoyas, Huancas, Collas, and all the other tribes to be found in the provinces . . . each of them was established in the place and district set aside for them by the governors of the city. They observed the customs of their own people and dressed after the fashion of their own land, so that if there were a hundred thousand men, they could be easily recognized by the insignia they wore about their heads' (Cieza de León, 1959, pp. 144-8).

Although the Inca practised human sacrifice on some occasions, sacrifices of llamas, guinea pigs or maize beer (*chicha*) were more common. The use of a lunar calendar divided the year into twelve months, each of which had its festival celebrated with processions, dances and offerings. Viracocha, the creator, was the chief deity, but the Sun, which was associated with the ruling family, appears to have been accorded more prominence than other secondary deities representing heavenly bodies. Great temples were dedicated to these gods, and served by priests. Young girls selected for their beauty resided in adjacent nunneries, where they toiled to create exquisite textiles for the glory of the gods and the divine ruler.

The Inca socio-political organization, marvellously adapted to the administration of the empire, was unable to cope with the unexpected intrusion of men from a totally different world—that of sixteenth century Spain. The Spanish Conquest was facilitated by its timing. In 1532, a civil war was in progress between Atahualpa and Huascar, half-brothers who disputed each other's claim to their father's throne. Gold, silver and precious jewels beyond their wildest imaginings seduced the Spanish soldiers, most of whom were of low class origin, and the resulting devastation was graphically described by Cieza, who wrote, 'wherever the Spaniards have passed . . . it is as though a fire had gone, destroying everything in its path' (Cieza, 1959, p. 62). The Inca Empire, created in a few short decades, disappeared within a lifetime, leaving splendid architectural ruins (Pl. 62 a) as testimony to its brief glory.

8. THE INTERRELATED RISE OF NEW WORLD CIVILIZATION

Up until relatively recent times, it was believed that two hearths of New World civilization, Mesoamerica and the Central Andes, had achieved their developments independently, or at best with a minimum of intercommunication. However, better knowledge of the cultural sequences in both areas has made it increasingly evident not only that a great deal of interchange took place, but that it began at a relatively early time. During the early Formative period, traits of basic significance were passed from one region to the other, including pottery making and certain species of domesticated plants. Beginning shortly before the Christian era and continuing to the time of the Spanish Conquest, evidence of contact is more abundant, perhaps the result of planned trading

expeditions. Flat and cylindrical stamps made of pottery, small pottery masks, numerous details of costume and head-dress are among elements introduced onto the coast of Ecuador from Mexico, while the figurine mould, shaft and chamber tomb construction, and metallurgy are among traits that moved from south to north. Items that survive in the physical record must have been accompanied by elements of intangible nature, such as religious beliefs and practices. The principal foci of contact appear to have been the coasts of Ecuador and southern Mexico, and many of the exchanged traits were adopted sporadically or not at all outside of these regions. Others, however, were widely diffused. How significant this interchange was in stimulating the process of cultural development in either region is a question that has not as yet been answered.

9. TRANSPACIFIC CONTACT

Another long-cherished belief that has recently been challenged is the independence of New World cultural development. Until the last decade, the majority of archaeologists viewed New World prehistory as an isolated phenomenon, and resemblances between cultural traits or complexes in Asia and America were interpreted as the result of parallelism or convergence. As the chronological, geographical and contextual circumstances have become better known, however, it is increasingly evident that this explanation can no longer be accepted uncritically. Nor can we be certain that transpacific introductions were insignificant in their effect on developing New World culture. Investigations of the origin of pottery making on the coast of Ecuador have produced the suggestion of a transpacific introduction from western Japan around 3000 B.C. The appearance of a complex of ceremonial traits including head rests, small house models with Asiatic architectural treatment, and a special type of pan-pipe, in approximately the same area several thousand years later seems best explained as the result of another Asiatic introduction, this time perhaps from the Malay peninsula. Many components of Maya art, architecture, astrology, calendar, mythology, symbolism and ritual have Asian counterparts, and it is becoming increasingly improbable that independent development can have produced them all. Although we are far from understanding the nature and extent of transpacific contact, it is safe to affirm that the rise of civilization in the Old and New Worlds was not an independent phenomenon, and that theories concerning the inevitability of a cultural evolutionary process leading from savagery to civilization must take this factor into account.

10. THE INTERMEDIATE OR CIRCUM-CARIBBEAN AREA

Between the southern limits of Mesoamerica and the northern boundary of the Inca Empire, the land narrows like a double-ended funnel, pinched to its minimal width at the Isthmus of Panama. The mountains diminish in elevation, reducing the range of altitudinal and climatic variation. Temperate and

sub-tropical intermontane basins, the type of environment most congenial to the development of high civilization to the north and south, are fewer and smaller. A major portion of the area, including both coasts and most of the land east of the cordillera, is clothed in tropical rain forest and bordered by mangrove swamp.

Moving eastward along the Venezuelan coast, the terrain increases in aridity, reverting to tropical forest only in the vicinity of the Orinoco delta. In spite of superficial environmental differences, cultural development here resembles most closely that of lower Central America, and this region along with the Greater and Lesser Antilles has been incorporated into the Circum-Caribbean culture area. (Map XXVIII, Area 2.) Cultural diffusion was facilitated by both a generalized similarity in environment and by the ease of intercommunication via coastwise or trans-Caribbean navigation. Most of the islands are within sight of one another, making celestial navigation unnecessary. The gaps separating them from the mainland are only 195 kilometres wide between the Yucatán peninsula and Cuba, and 145 kilometres wide between Trinidad and Grenada.

In spite of a relatively early transition from food gathering to food production and settled life, and in spite of geographical proximity and consequent accessibility to both Nuclear Areas, cultural development in the Intermediate or Circum-Caribbean Area never exceeded the general level attained in the Nuclear Areas by the end of the Formative period. Communication between Mesoamerica and Ecuador, which brought about the exchange of numerous cultural elements, by-passed the intermediate Pacific coast. Influences trickled over the terrestrial frontiers into Central America and Colombia and across the water to the Greater Antilles, enriching locally developing cultures, but failing to catalyse them into significantly greater complexity.

Here, as in the Nuclear Areas, pottery making began at an early time. In fact, carbon-14 dates between 2500 and 3000 B.C. from the site of Puerto Hormiga on the north Colombian coast (Map XXVII) are of the same magnitude as those for the Valdivia culture, with the earliest pottery in the Andean Area. A relatively early date has also been obtained from a ceramic site on the Pacific coast of Panama, and it is probable that sites of comparable antiquity will be found on the Caribbean coast of Central America when a more careful search has been made. By the first millennium B.C., village life was well established along the rivers and estuaries of the north Colombian coast, and there is indirect evidence to suggest that a significant fraction of the food supply was obtained from cultivated plants. The presence of large, flat, pottery griddles, used by surviving Indians throughout the tropical forest for the preparation of bitter manioc, implies that this staple was already important. Fish, shellfish, turtles and other aquatic fauna, which still abound in the rivers, estuaries and lakes as well as off-shore, continued to be exploited, while wild-plant gathering and hunting also contributed to the diet.

Although large portions of the Intermediate Area are archaeologically little

known, existing evidence suggests that manioc agriculture and pottery making diffused rather rapidly about 1000 B.C. from the north Colombian coast both to the east and to the north-west. The earliest pottery at the mouth of the Orinoco, which dates from this time, is characterized by flanged-rim bowls with modelled and incised decoration resembling those present a few centuries earlier at Malambo on the north coast of Colombia. The ecology of the Orinoco delta is similar to that of the lower Magdalena region of Colombia, so that immigrants would have had minimal difficulty in transplanting their former way of life. The relative aridity of the intervening Venezuelan coast, and the resulting differences in natural subsistence resources and agricultural potential, probably explains the rarity of sites belonging to this early Barrancoid ceramic tradition between Lake Maracaibo and the lower Orinoco. By contrast, the gap in the archaeological record between northern Colombia and the Yucatan peninsula is more likely to reflect the paucity of archaeological investigation than absence of 'stepping-stone' sites. The existence in Olmec ceramics of flanged-rim vessels decorated with modelled adornos and incised designs resembling those of the Barrancoid tradition implies influence from northern South America. In this case, however, the new elements were infused into a pre-existing ceramic tradition, losing some of their distinctiveness in the process.

Diffusion in the opposite direction brought maize from Mesoamerica to Colombia around 500 B.C. Its introduction into the Momil complex on the Caribbean coast is inferred from the disappearance of manioc griddles and the appearance of manos and metates which are associated with the processing of grain into flour. Flat and roller stamps, and figurines appear about the same time, along with a number of Mesoamerican ceramic features such as tubular spouts, tripod legs, annular bases, and negative and polychrome painting. Henceforth, a cultural dichotomy becomes increasingly marked on the northern coast of South America, reflecting the environmental dichotomy between the mountainous western region with more temperate climate, and the tropical lowlands of the Orinoco basin and eastern coast. In the former region, maize, potatoes and other highland crops were favoured over manioc, and painting became the principal technique of pottery decoration, although modelling survived particularly in the form of adornos and effigy vessels. Population grew in size and concentration, and arts and crafts were elaborated. Throughout Central America, Colombia and western Venezuela, stone carving, gold casting, and pottery making reached a high level of artistry. Increasing differentiation in status and rank is reflected in the appearance of rich tombs, while the formalization of religious beliefs and practices is attested by the proliferation of ritual objects. Although stone architecture nowhere went beyond low walls, earthworks such as mounds, platforms and causeways occur in many places.

Over eastern Venezuela, the older manioc-based subsistence pattern and plastic tradition of pottery decoration persisted, although with modification.

The florescence of arts and crafts, the elaboration of ceremonialism and the general increase in cultural complexity evident to the west did not occur here. As far as archaeology can show, there was a high degree of cultural stability from the time of introduction of agriculture and pottery making until the end of the pre-Colombian period.

Pottery making was introduced into the Lesser Antilles from Trinidad or western Venezuela around the beginning of the Christian era. Although pre-ceramic and non-agricultural peoples had colonized the larger islands at least two millennia earlier, they were slow to adopt ceramics and cultivated plants. The first pottery appeared on Puerto Rico about A.D. 100 and on eastern Cuba some eight hundred years later, while the inhabitants of western Cuba were still non-ceramic when the first Europeans arrived. In spite of this slow start, the highest cultural developments in the West Indies were attained on Puerto Rico, Hispaniola and eastern Cuba. Objects of ceremonial significance are most striking, including pottery figurines, exotic idols of wood or stone (Fig. 45), carved wooden stools, stone pectorals and amulets, and anthropomorphic pestles and celts. In general function, and sometimes in specific manner of execution, these find their closest prototypes in Central America and western Venezuela, suggesting that communication must have taken place across the intervening water. The use of caves as shrines, and the ceremonial ball game are other shared traits. Since both the island dwellers and the inhabitants of the mainland coast were well acquainted with watercraft, absence of this kind of evidence of voyages would be more surprising than its presence.

Although future archaeological work may modify the picture, the most highly developed remains now known are those of the Tairona, whose villages and towns occupy the lower slopes of the Sierra Nevada de Santa Marta in north-eastern Colombia. House platforms faced with rough or dressed stones, stone house foundations, stone-faced earth mounds, causeways, stairs, stone-

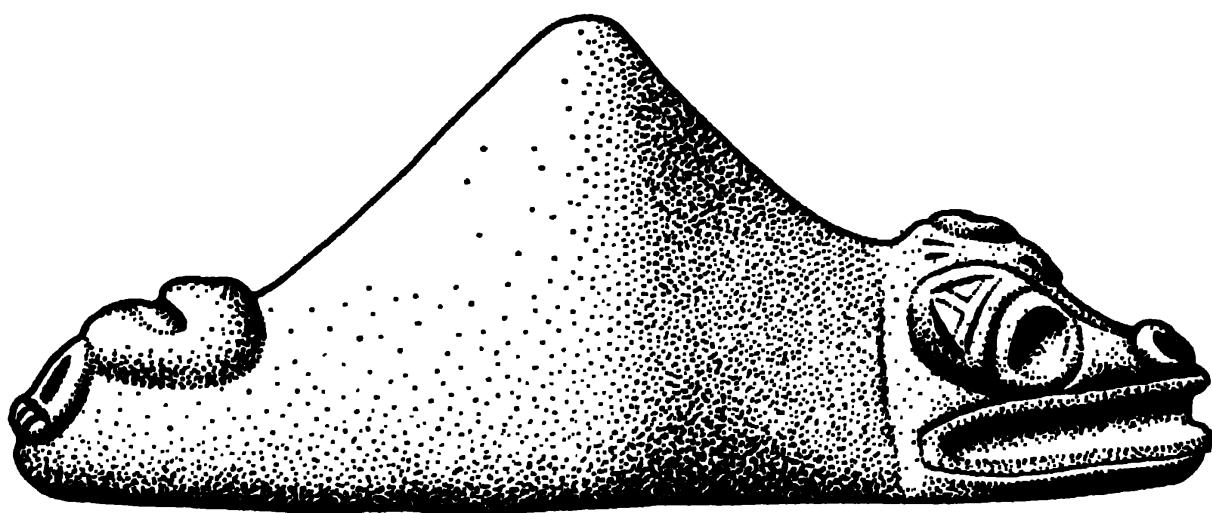


FIG. 45. Stone three-pointed idol or 'zemi' from Puerto Rico. Length 31·5 cm.

lined reservoirs and drainage ditches were interspersed with terraced fields. Although long since fallen into ruin, these structures were inhabited at the time of the arrival of the first Spaniards, who report that the largest towns had populations into the thousands. Inter-village trade was vigorous, both in agricultural products and manufactured goods. In addition to domestic pottery, vessels of complicated form and elaborately sculptured decoration were made for mortuary or ceremonial use. Figurines representing priests or warriors with animal head-dresses, stone masks, polished stone beads, and pottery stamps are reminiscent of Mesoamerican products, while the highly developed art of metallurgy in copper and gold reflects Andean influence. Even without Spanish eyewitness accounts, it could have been inferred that Tairona society was characterized by occupational specialization, including potters, metal workers, stone carvers, civil and religious leaders, and that inter-village trading was a major activity. Lacking these accounts, however, the prevalence of inter-village warfare, the rivalry between civil, military and priestly authorities, and the temporary alliance of several villages into two hostile confederations would probably not be reconstructible. Although it is reported that an army of 20,000 was assembled to defend a major Tairona town, leadership was divided. This weakness was exploited by the Spanish and ultimately brought about their victory, but only after a struggle lasting nearly 100 years.

The inhabitants of the Antilles were the first to enter the pages of history, and to bear the name of 'Indians', the consequence of Columbus' mistaken belief that he had succeeded in finding the western route to the 'province of Cathay'. In a letter written 15 February 1493, reporting briefly on his first voyage along the northern coasts of Cuba and Hispaniola, Columbus emphasized the friendliness and generosity of the people, as well as their skill in navigation:

'The people . . . , both men and women, go about naked as their mothers bore them, except that some of the women cover one part of themselves with a single leaf of grass or a cotton thing that they make for this purpose.'

' . . . They have no weapons, save sticks of cane cut when in seed, with a sharpened stick at the end, and they are afraid to use these. At times I sent two or three men ashore to some town to talk with the natives, and they would come out in great numbers, but as soon as they saw our men arrive, they would flee without a moment's delay. . . .'

'It is true that after they gain confidence and lose this fear, they are so unsuspecting and so generous with what they possess that no one who has not seen it would believe it. They give away whatever they may have, never refusing anything asked for. . . . This does not happen because they are ignorant; indeed they are of very subtle minds, and are men who navigate all those seas. . . .'

'In the islands they have a great many canoes, something like rowing boats,

of all sizes, and many are larger than an eighteen-oared galley. They are not very broad, as they are made from a single log, but a galley could not compete with them in rowing, because they go with incredible speed. . . . I have seen some of these canoes with seventy and eighty men in them, and each had an oar'. (Smith, 1962, pp. 185-7.)

Within a few decades of this initial contact, the Indians of the Greater Antilles were nearly extinct, broken in health by forced labour in mines and on plantations, and decimated by European diseases. The focus of adventurers and colonists moved westward to the mainland, where the rewards are greater and the population was already conditioned to life in a society stratified into masters and serfs.

II. THE DESERTS

North-west of Mesoamerica and south-east of the Andean area are regions of semi-arid climate, moderate elevation, and xerophytic vegetation. Although streams run dry during part of the year, the soil is productive with specialized agricultural techniques. In spite of proximity to the Nuclear Areas, however, these regions lagged in the adoption of settled life.

Several ecological factors may be responsible. One is the presence of a natural barrier in the form of an intermediate zone in which agriculture can be practised only in restricted enclaves or with highly specialized technology if at all, and which were occupied by semi-nomadic hunters and gatherers up until the time of the Spanish Conquest. Apparently, only after a relatively advanced level of cultural development was attained in the Nuclear Areas was there a sufficient impetus to push cultural elements across this barrier. The special characteristics of the desert regions themselves are also relevant. Varieties of maize introduced from the Nuclear Areas were less productive with uncertain moisture and shorter growing seasons, and it was only after locally adapted varieties were obtained that significant cultural advances were made. Local and area-wide climatic fluctuations, particularly the existence of periods of drought, made full dependence on cultivated plants precarious, however, and hunting and wild food collecting contributed an important part to the diet up until contact times.

A. The United States South-west (Map XXVIII, Area 3A.)

The North American desert contains three major and several lesser ecological zones, which equate with distinctive varieties of South-western culture. Southern New Mexico and south-eastern Arizona, with forested slopes and grassy valleys above 2,000 metres elevation, was the habitat of the Mogollon tradition. The 'four corners' area, so-named because the states of Arizona, New Mexico, Utah and Colorado intersect, and characterized by high plateau riddled with deep canyons, was the homeland of the Anasazi. The low, hot

desert of southern Arizona and New Mexico was occupied by the Hohokam. These 'co-traditions' shared a common ancestry in the ancient Desert culture of the Intermediate period, and were subject to influences of varying intensity from Mesoamerica and to a lesser extent from neighbouring regions to the north and east. Although from one point of view, the South-west can be considered a marginal expression of Mesoamerican culture, its history is not a simple recapitulation of events that took place to the south.

While evidence of maize cultivation has been found in South-western sites dating before 3000 B.C., the traditional Desert culture persisted with little alteration until shortly prior to the beginning of the Christian era. About 100 B.C., plain and red-slipped pottery appears in the Mogollon and Hohokam areas, followed about 200 years later by red-on-buff painting. (Fig. 46.) The typical design on the interior of hemispherical bowls takes the form of two



FIG. 46. Reptilian designs on pottery of the Hohokam culture of the south-western United States (a), and the Aguada culture of north-western Argentine (b).

solid intersecting bands dividing the field into quarters filled with concentric triangles, which was also the type of decoration employed during the middle and late Formative period in the Valley of Mexico. Recent archaeological investigations in northern Mexico have begun to reveal a chain of simple agricultural complexes along the Sierra Madre Occidental, which seems to be the most probable route by which cultural influences passed from Mesoamerica into the Hohokam and Mogollon areas. Because the Anasazi occupied a more isolated position to the north, Mesoamerican influence on Anasazi culture was both reduced in strength and retarded in time.

By A.D. 500, sedentary village life was well established in the Hohokam area. Farming of the desert required irrigation, and canals ten metres wide and sixteen kilometres long were already in use by this time. Elements of art style and numerous luxury objects, such as turquoise mosaics, shell beads and gorgets, shell trumpets, and effigy vessels, have Mesoamerican prototypes,

but the most striking evidence of acculturation takes the form of ceremonial earthworks. The ball court at Snaketown had a playing field fifty-six metres long and nineteen metres wide, with earth embankments six metres high along both sides. Associated are platform mounds, some constructed in several stages in typical Mesoamerican fashion. The largest measures twenty-nine by twenty-two metres at the base and three metres high, and had a structure of perishable material on the summit. The climax of Hohokam construction came between A.D. 1200 and 1400, when multi-storied 'great houses' were erected, with mud walls up to two metres thick. Although the only objects of unquestionable trade origin are copper bells, cultural correspondences are so numerous and detailed that the process of diffusion seems inadequate to account for them. Knowledge of Mesoamerican prehistory has led to several alternative explanations, among them that these new ideas were introduced by itinerant traders, who formed a special occupational group in later Mesoamerican society, or that Hohokam culture is the result of actual colonization by Toltec nobility fleeing Tula at the time it was destroyed.

The Mogollon to the east, although participating in the early acquisition of ceramics, exhibit much less subsequent Mesoamerican influence than the Hohokam. An ecological factor may be involved, since the mountain habitat of the Mogollon offered less potential for intensive farming, and consequently inadequate support for the elaborate ceremonialism of which most of the Mesoamerican features in Hohokam culture form part. However, shell bracelets, shell and turquoise beads were manufactured, and often buried with the dead. Here, as in the Anasazi area, the earliest villages were composed of two to twenty semi-subterranean houses with timber and earth roofs. The maize harvest was stored in pits either inside or outside the house. With the passage of time, Mogollon settlements increased in size, and by A.D. 950 they consisted of several units of surface rooms with stone and mud masonry walls, probably each occupied by a group of kin. As is often the case with religious structures, pithouses survived as ceremonial gathering places long after they were superseded as dwellings. Community leadership was exercised by a council, whose members were the heads of the kinship groups. Each community was autonomous, and social organization was essentially democratic.

The best known of the South-western co-traditions is the Anasazi, whose spectacular cliff dwellings (Pl. 63 a) and large 'apartment house' ruins were the first to attract the attention of travellers and archaeologists. As a consequence of initial scientific investigation in this area, where Mesoamerican influence was most diluted, pottery making and other basic cultural elements were at one time believed to have originated in the Anasazi area. It is now clear that, on the contrary, the Anasazi were the recipients of Mesoamerican influences modified during filtration through the Hohokam and Mogollon cultures to the south.

Anasazi culture has its roots in rock shelter habitations and small pithouse villages, which in the early centuries of the Christian era do not differ strik-

ingly from those of the Mogollon, except for the absence of pottery. However, by the Basket-maker II period, between A.D. 400 and 700, the appearance of corrugated cooking vessels and black-on-white painted pitchers, double-necked bottles, ladles and other distinctive pottery forms, the domesticated turkey, and various other traits, signal the emergence of a separate cultural tradition. Between A.D. 700 and 900, paralleling the Mogollon trend, above-ground dwellings replace the earlier pithouses, which survive as ceremonial structures or 'kivas'. By Pueblo III, the 'Classic' period of Anasazi culture, between A.D. 1100 and 1300, much of the populace was concentrated in towns. The largest is Peublo Bonito in Chaco Canyon, New Mexico, a D-shaped complex of some 800 rooms, increasing from one storey around the interior plaza to four stories along the curved rear wall. Its population has been estimated at around 1,200. Numerous kivas up to twenty metres in diameter occupy the lower storey. When the structure was inhabited, their flat roofs enlarged the community area, and their secluded interiors, reached by a trap-door in the roof, were the locus of meetings and secret ceremonies conducted by religious fraternities. Although the dimensions of the cavity set an upper limit on the size of cliff dwellings, superposition of rooms to four or more storeys permitted maximum use of air as well as ground space. Cliff Palace, in Mesa Verde, contains more than 200 rooms and 23 kivas.

Population concentrations of this magnitude were made possible by refinements in agricultural technology. Check dams were built for conservation and control of rainwater, and streams were diverted into irrigation canals up to 6.5 kilometres long. Although construction and maintenance of irrigation systems of this magnitude has sometimes been believed to require stratified socio-political organization, Anasazi leadership was invested in a council of elders. Differences in status and rank were minor, and the interests of the individual were subordinated to those of the community. Religious observances, such as masked dances and kiva ceremonies, are characterized by secrecy and anonymity, so that emergence of social distinctions from this sector was effectively inhibited.

Pueblo III culture incorporated many Mesoamerican elements present earlier in the Hohokam area, including copper bells, conch shell trumpets, turquoise mosaics, effigy vessels, circular towers, and parrots, which were kept for their feathers. The more flamboyant aspects of Anasazi ceremonialism, such as masked dances, the Kachina cult (Fig. 47), and ceremonial kiva murals featuring mythological scenes, are more recent, making their appearance about A.D. 1300, and suggesting another wave of Mesoamerican influence. After A.D. 1300, many of the flourishing towns were abandoned, and the Anasazi population concentration moved southward. Various explanations have been proposed; drought-induced crop failure, and the predation of nomadic hunting groups on the northern frontier are the two most common. Probably a combination of interrelated factors was responsible. About the same time, communication with Mesoamerica was broken off. The resulting isolation permitted



FIG. 47. Hopi Kachina or 'messenger of the gods', an element of the ceremonialism elaborated in the south-western United States in the late pre-European period (after Miguel Covarrubias).

development of the distinctive Pueblo culture encountered by the first Spanish explorers, who arrived in the South-west in the sixteenth century.

B. North-western Argentina and Central Chile (Map XXVIII, Area 3B.)

Like its North American counterpart, the South American Desert area is composed of several ecological zones. The three principal ones are the Western Forests (parts of the Argentine provinces of Salta and Jujuy), the Valliserrana (most of Catamarca and La Rioja), and the Transversal Valleys (central Chile). Although a large number of local complexes have been identified, and regional variations are pronounced during certain time periods, it is possible to discern major trends of cultural development and sources of innovations. As was true in North America, the major impulse was from the Nuclear Area, in this case the central Andes. However, the intervening Bolivian altiplano with its great salt plains unsuitable for agriculture or herding, and the north Chilean Atacama Desert, the most arid portion of South America, insulated north-western Argentina and central Chile from participation in settled village life until almost the beginning of the Christian era.

Cultivated plants, pottery making and metallurgy arrived almost simultaneously in all three of the principal ecological areas. The pottery of Tafí I, in the Valliserrana region, consists of plain or red-slipped globular vessels, also characteristic of the earliest Mogollon pottery in the United States southwest. Decoration, which appears slightly later, is in the form of incision in geometric motifs such as triangles, stepped elements and crosses, which have prototypes in the Formative tradition of the Andean area. About 300, polychrome painting was added. Settlements typically consist of two to five small circular stone-walled houses around a central patio, although small pit houses occasionally occur. Burial of adults was in the house or patio, and differences in grave goods suggest incipient social stratification. Cemeteries of up to 200 urns contain the remains of children. Terraced fields date from this period, as do ceremonial platforms and artificial mounds. Potatoes and quinoa were cultivated, and llamas probably raised. Sculpture in stone and wood was well developed, while an abundance of rings, bands, bells, tweezers, needles, axes and other objects attests to the importance of metallurgy in copper, silver and gold.

In the period A.D. 700–1000, the Valliserrana region was dominated by the Aguada culture, whose florescent development in arts, crafts and ceremonialism exhibits Tiahuanaco influence. Bronze was introduced, maize was added to the subsistence inventory, agricultural techniques were intensified, and population density increased. Ceramics, decorated by incision or polychrome painting, reached an artistry never later surpassed. Feline and 'dragon' motifs on pottery, metal and wooden objects may symbolize supernatural beings, while richly carved wooden tablets and monolithic bronze axes are among characteristic objects of probable ceremonial significance. Warfare was

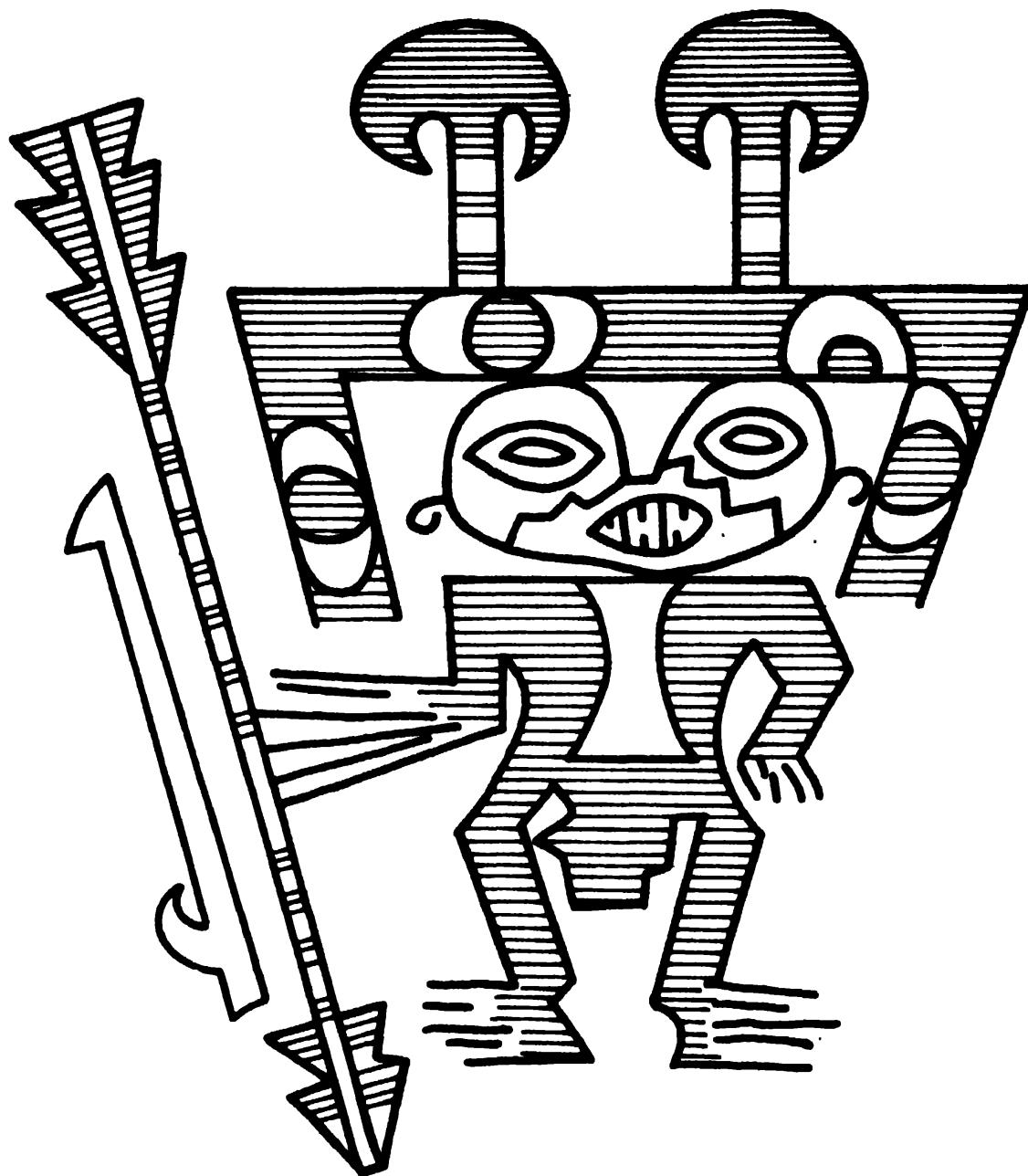


FIG. 48. Stylized figure of a warrior with spear and spear thrower (atlatl), from a pottery vessel of the Aguada culture (after Alberto Rex González).

common, to judge from depictions of warriors (Fig. 48) and trophy heads, and from the presence of decapitated burials. The existence of a ruling class is implied by a small number of graves with unusually rich offerings.

The flourishing Aguada culture disappeared about A.D. 1000 so suddenly and completely as to suggest that an invasion may have taken place. Communal pit houses, urn burial, and black-on-red painted pottery were introduced and bronze working was elaborated. During succeeding centuries, changes in settlement pattern parallel in a general way those of the United States South-

west: Pit houses were replaced by small rectangular stone-walled surface structures, which increased in size and culminated in irregular 'apartment house' buildings of 250 or more rooms. Typically erected on mesa tops, these bear a striking resemblance in material and method of construction, as well as in location and environmental setting to ruins in the Anasazi area.

By A.D. 1500, the Inca had expanded the borders of their empire to embrace most of north-western Argentina and northern Chile. The highways were extended, fortresses, warehouses and way-stations were built, and up to 90 per cent of the pottery in such places is of Inca types. The inhabitants were thus in some measure prepared for Spanish domination, which followed not long after.

12. THE FORESTS

In North America, a vast forest once covered all of the eastern United States, while in South America more than half of the continent is still blanketed with trees. The hemisphere's two major river systems are largely contained within these forest zones. In the north, the Mississippi gathers in the Ohio, the Missouri, the Arkansas and other tributaries as it flows southward to empty into the Gulf of Mexico. In the south, the mighty Amazon is fed by rivers that dwarf even the Mississippi, before spilling its muddy water into the Atlantic Ocean. Annual floods inundate low land, and recede leaving shallow lakes abounding in entrapped fish and marshes attractive to water birds. Large and small mammals inhabit the forest, and in certain places and seasons wild edible plants provide a bountiful harvest. General ecological similarities channelled cultural development in the two forest areas in similar directions by facilitating the adoption of certain kinds of traits introduced from the Nuclear Areas and hindering the adoption of others.

There are also important differences between the Eastern Woodlands of North America and the South American Tropical Forest. In the north, the climate is temperate, with warm summers and cold winters, and only southern Florida is reasonably safe from frosts. Soils are generally fertile, especially the Mississippi flood plain and the area north of the Ohio valley, where the glaciers deposited rich soil. Rainfall is spaced over the entire year, so that agriculture can be practised without irrigation. River flood plains are narrow, and well-drained land suitable for hunting, farming or habitation predominates.

In South America, by contrast, the forest area is nearly bisected by the equator, and except on its margins is less than 500 metres above sea level. The climate is consequently tropical, with dry 'summers' and rainy 'winters'. The combination of low elevation, many large rivers, and concentration of precipitation during half of the year results in annual inundation of vast areas. Much land is permanently flooded, other large sectors are poorly drained, still others are badly leached. Factors like these combined to make the Tropical

Forest less productive than the Eastern Woodlands for cultures dependent upon intensive agriculture for their primary support.

A. Eastern Woodlands (Map XXVIII, Area 4A.)

Although pottery making was introduced to the Florida and Georgia coasts before 2000 B.C., and maize has been detected in the mid-Atlantic region prior to 1500 B.C., the Archaic hunting and gathering way of life appears to have been little affected. Around 1000 B.C., however, a significant alteration took place to judge from the rapid diffusion throughout most of the area of two new cultural elements: pottery with cord or fabric marked surfaces, and mortuary mounds.

The fact that the Poverty Point complex near the mouth of the Mississippi River, with an initial date of 1200 B.C., has large earthworks but lacks cord-marked pottery, supports the inference that these two diagnostic Woodland traits are of independent derivation.

The type site of Poverty Point, inhabited between 1200 and 400 B.C., is perhaps the most spectacular aboriginal engineering achievement north of Mesoamerica. Dwellings occupied the summits of low artificial ridges that form six concentric octagons, the outermost of which is slightly more than a kilometre in diameter. Gaps in the corners of the octagons provide access to the central plaza. Seven degrees south of due west from the centre, and immediately outside the living area, a large earth mound twenty-three metres high was constructed in the shape of a bird with outspread wings. A second mound, similar in shape and size, but apparently not completed, is located two kilometres north of the centre of the octagon, oriented about seven degrees west of true north. Stream erosion has destroyed the terrain east and south of the site, making it impossible to detect whether other bird effigy mounds once existed on these two sides as well. Mesoamerican influence is suggested not only by the orientation of the site, but also by the presence of petaloid green-stone celts, nude female clay figurines, the practice of striking blades from prepared cores, and the manufacture of small beads, buttons and bird head pendants from hard stone—all of which have prototypes on the Gulf coast of Mexico. The few fragments of pottery that have been found also have southern affinities.

By 1000 B.C., small earth mounds were being constructed in the upper Mississippi Valley over cremation burials, a practice also observed at Poverty Point. However, associated 'Woodland' pottery, with deep conical-based jars and cord or textile marked surfaces, differs both in vessel shape and decoration from the earlier pottery of the south-east. This negative correlation, plus fundamental resemblances to Neolithic pottery of northern Asia and Europe, makes diffusion from the latter region the best explanation for its origin. (Map XXVII.) Subsequent ceramic development in the Eastern Woodlands can be viewed as a contest between the paddle-stamped and cord-marked

wares of northern origin and the plain, rocker-stamped, incised, zoned-punctated and painted ceramics of southern affiliation.

Although the impetus may have come from Mesoamerica, it was in the Ohio Valley rather than at the mouth of the Mississippi that the first important climax took place in the form of the Adena culture, which flourished between about 800 B.C. and A.D. 200. The population, which lived in small scattered hamlets, collaborated in the construction of earthworks whose principal function was to memorialize the dead. The largest mounds were erected over a log tomb in which one to three adults were interred. The grave offerings provide an indication of Adena craftsmanship and art: gorgets, tubular pipes and incised tablets of polished stone; beads and combs of bone or antler; bracelets, rings, pendants and beads of hammered copper; spoons and beads of marine conch shell. Some mounds are in the form of rings as much as 100 metres in diameter, which are presumed to have had a ceremonial significance. Pottery vessels are simple in shape and predominantly undecorated, implying a solely domestic function.

About 300 B.C., the Hopewell culture began to emerge a little to the west of the Adena heartland. Beginning in southern Illinois and Indiana, its influence ultimately expanded over most of the Ohio, Missouri and upper Mississippi drainages. In many respects, Hopewell is an elaboration of Adena culture. Larger and more complicated earthworks were constructed; embankments up to five metres high enclosed circular, rectangular or octagonal areas, or extended in nearly parallel lines as though defining avenues. (Fig. 49.) Although some of the structures are on hilltops, the existence of multiple breaks in the walls makes a defensive function seem unlikely. Most of the geometric earthworks are associated with burial mounds of conical or elongated form. The largest burial mound at the Hopewell site measures 152 metres long, 55 metres wide and 10 metres high. Incomplete excavation disclosed three offertory caches and more than 150 burials, some with rich grave goods. Other mounds contain multi-room tombs with interments, cremations and large quantities of specially manufactured mortuary goods, including chert or obsidian blades; freshwater pearls; engraved human and animal bones; stone effigy pipes (Fig. 50); thin mica or copper sheets cut in the outline of serpents, animal claws, human beings, swastikas or other geometric figures; earspools, pan-pipes and mask or head-dress components of beaten copper; polished stone atlatl weights, and textiles with painted designs. While most of the pottery continues the earlier Woodland tradition, a small amount was decorated with intricate zoned designs.

Hopewell socio-political organization is poorly understood, but the richness and variety of these grave offerings imply the existence of marked class distinctions, as well as craft specialization. The presence of obsidian and grizzly bear teeth from the Rocky Mountains, alligator teeth and shells from the Atlantic coast and the Gulf of Mexico, copper from Minnesota, and mica from the Appalachian Mountains, attests to far-flung trade relations, by which

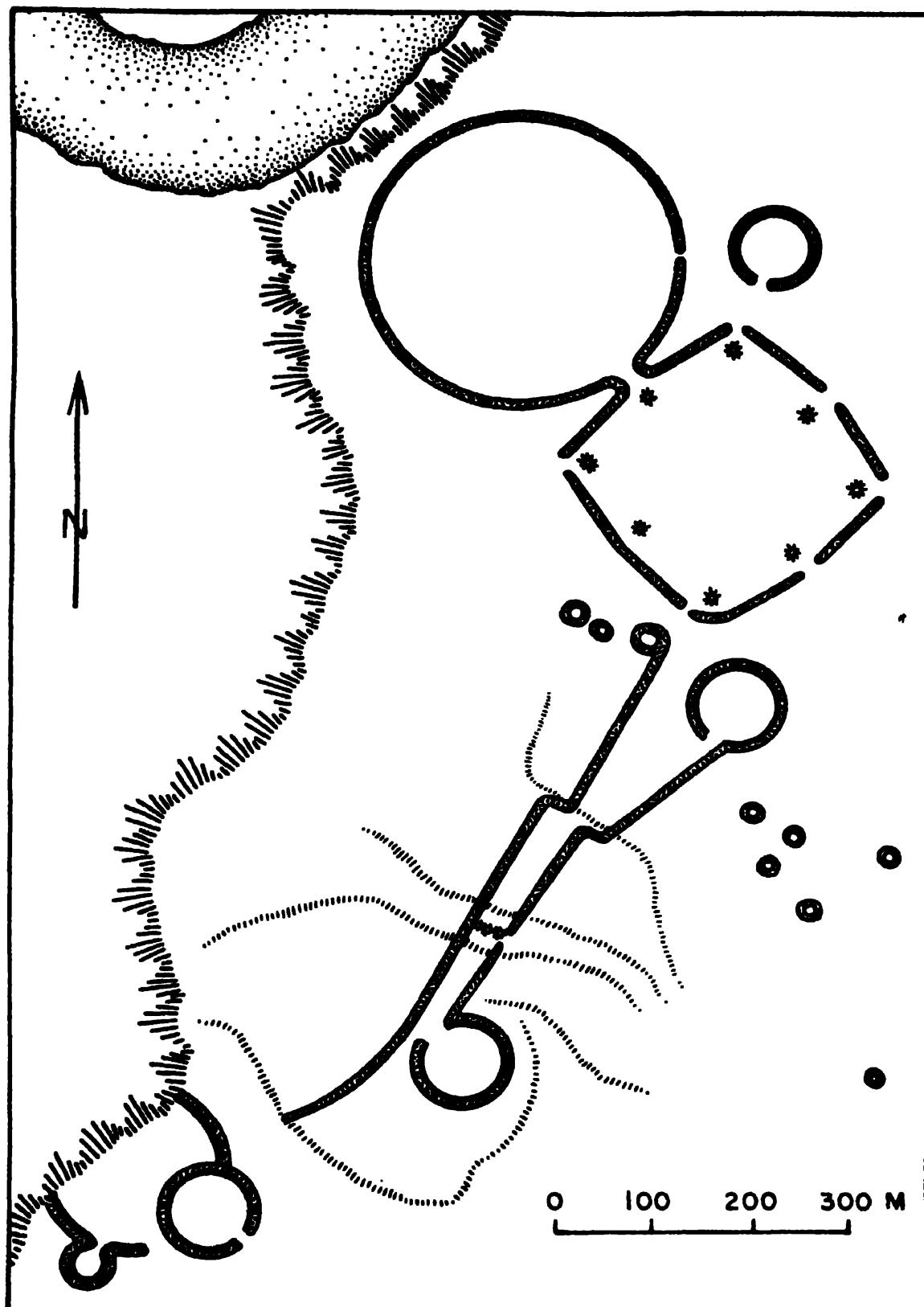


FIG. 49. The High Bank earthworks in Ross County, Ohio: typical constructions of the Hopewell culture in the eastern woodlands (after Henry C. Shetrone).

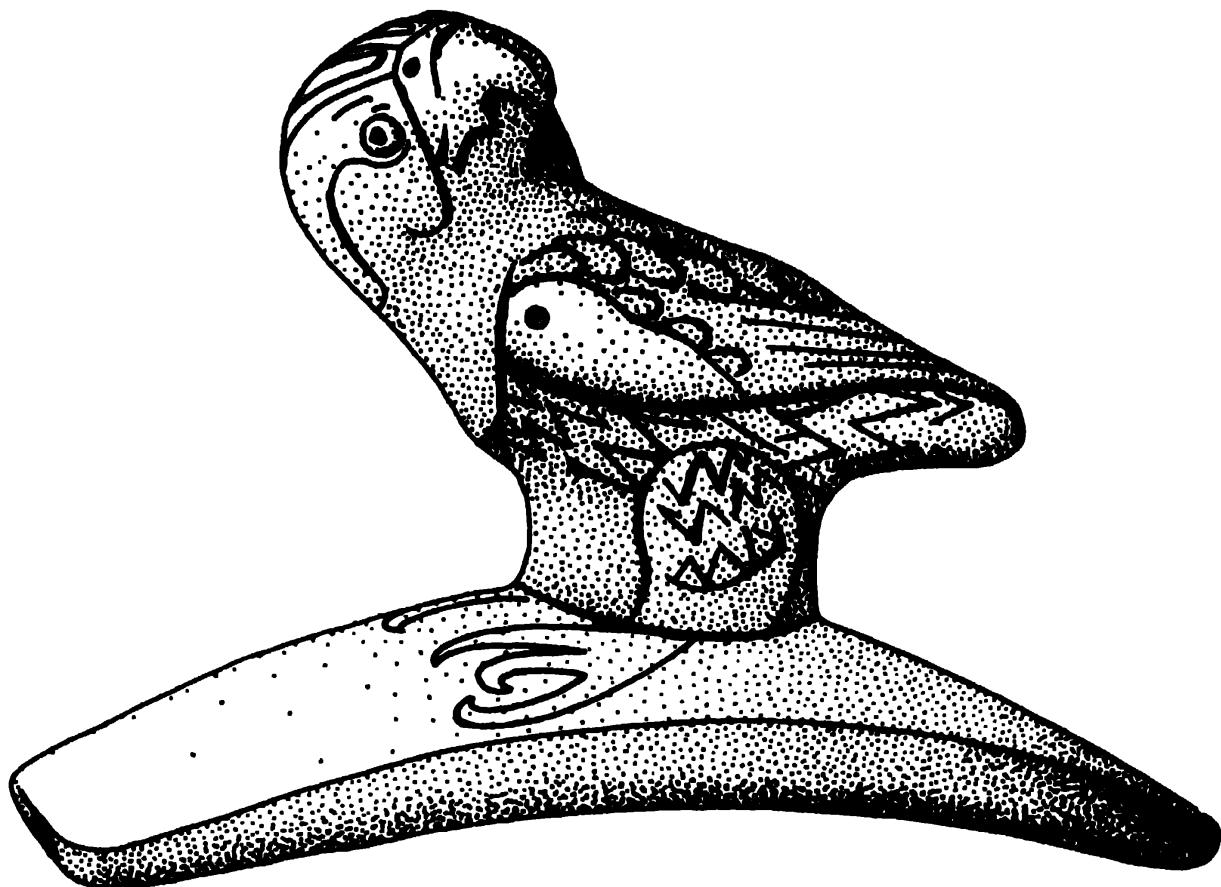


FIG. 50. Platform pipe carved in the naturalistic style of Hopewell stone sculpture (after Gordon R. Willey).

exotic raw materials were put into the hands of Hopewell craftsmen, who transformed them into exquisite expressions of symbolic art to be placed in the tombs of people of high rank. In many respects, including the elaboration of religious art, the wide network of trade relations, and the construction of ceremonial centres where few people lived but many came to work, exchanged their goods, and took part in rituals, Hopewell culture is reminiscent of that during the Formative period in Nuclear America. As was the case with the Olmec and Chavín cultures, Hopewell expansion probably did not involve conquest or political domination, and also like these earlier religious florescences, the decline of Hopewell culture was followed by a cultural climax in a different part of the region, in this case in the lower valley of the Mississippi River.

Although some authorities contend that during the Adena-Hopewell period subsistence was derived principally from hunting, fishing and the harvest of wild plants such as amaranth, wild grapes and nuts, it is universally agreed that the Mississippi culture was based on intensive cultivation of maize, beans and squash. From a beginning about A.D. 700 in the lower Mississippi Valley, the platform mounds, ceremonial art and shell-tempered pottery characteristic of this culture diffused widely throughout the south-eastern United States,

stimulating in some regions the beginning of urbanism and centralized political organization. While some hamlets contained no ceremonial structures, Mississippian ceremonial sites, unlike those of the preceding Adena-Hopewell, were typically also places of residence. Settlements ranged from villages with between two and eight mounds to cities like Cahokia near modern St Louis, with eighty-five large mounds, more than a hundred smaller ones, and habitation refuse extending some 9.6 kilometres along the river bank. The largest platform mound at Cahokia measures 300 by 200 metres at the base by 30 metres high, and had one or more buildings of perishable wattle and daub construction on the summit. In many features—including arrangement around a plaza, function as temple substructures, and construction in successive stages accompanied by the destruction of the buildings on the previous stage—these mounds incorporate earlier Mesoamerican concepts. Numerous traits of pottery form and decoration, ceremonial art and symbolism, also point to Mesoamerican inspiration. Without the foundation laid by the earlier Adena-Hopewell culture, however, infusion of many of the new practices might have been more difficult if not impossible.

Mississippian sites provide clear evidence of social stratification. The common people were buried in the village, accompanied with little or no grave goods, while individuals of high status were buried in mounds, sometimes with elaborate offerings of ceremonial and luxury objects. The manufacture of special items for mortuary use is best illustrated by the pottery. Throughout the domestic portion of a site, pottery is utilitarian in form and plain, fabric-marked or incised. By contrast, ceramics recovered from burial mounds take varied and often flamboyant shape with spouts, pedestal or tripod supports, effigy human or animal treatment, and decoration by incision, punctuation, red and white, polychrome or negative painting.

In addition to the type of luxury goods usually placed with the dead of high rank, Mississippian burial mounds produce an array of finely made objects of shell, stone, pottery and copper, decorated with a series of remarkable motifs reflecting the existence of a highly developed religious cult. In this category are shell gorgets, whole conch shells, and copper plaques carved or embossed with winged human figures dressed in elaborate costumes and carrying batons or trophy heads (Fig. 51), and a considerable number of standardized elements such as the weeping eye, a cross within a circle, a hand holding an eye in the palm, a human skull, and other more complicated and less easily described symbols. Recurrent themes are the eagle, the serpent and the cat. Monolithic stone axes, chipped stone knives, and highly polished and decorated stone bowls are other characteristic objects of this religion, variously referred to as the 'Southern Cult', the 'South-eastern Ceremonial Complex', or the 'Death Cult'. Whether the elaborately dressed figures represent priests or deities, their complicated costumes, ornate necklaces, arm and leg bracelets, give an idea of the magnificent appearance presented by secular and religious leaders of Mississippian society.



FIG. 51. Elaborately attired figure embossed on a copper plaque of the Mississippian culture from Etowah, Georgia (after Miguel Covarrubias).

The only direct indications of socio-political structure come from descriptions by early French explorers of practices surviving among tribes like the Natchez, who lived in the seventeenth century in nine villages along an eastern tributary of the lower Mississippi River. The Great Village, home of the high chief, surrounded a plaza flanked by two low platform mounds. One was occupied by the chief's house, and the other by the temple. Natchez society was stratified into two principal classes, the nobility and the commoners. Nobility was further subdivided into three levels, each with well defined rights and privileges. The hereditary nobility claimed descent from the sun, and the ruler bore the title, 'Great Sun'. The principal leaders in war and religion were close relatives of the Great Sun, and derived their authority from this kinship. The ruler held the power of life and death over his subjects, and at his own death was accompanied by wives and retainers to the afterworld. Others of his subjects sometimes volunteered themselves as companions, attracted by the prospect of an existence where 'the weather is always fine; one is never hungry' and 'men make no war . . . because they are no more than all one Nation'. (Spencer and Jennings, 1965, pp. 418-9.)

B. The Tropical Forest (Map XXVIII, Area 4B.)

Although it is reasonable to assume that the greater Amazon Basin was inhabited by hunting and gathering groups for many millenia, the density of the vegetation, the minimal use of stone for tools and weapons, and the slight amount of search have prevented the discovery of sites dating prior to the introduction of pottery making. The earliest ceramic complex, characterized by simple rounded bowl and jar forms, plain or twig-brushed surfaces and zoned hachure decoration, has been identified so far only on the lower Amazon. A single carbon-14 date places it on the Island of Marajó by 980 B.C. Whether or not plant domestication was introduced at the same time is uncertain, as is the route of diffusion. The existence of similar ceramic features on the north coast of Colombia several millenia earlier suggests influence from this direction. (Map XXVII.) As was the case in North America, this early introduction of pottery appears to have had little effect on the local culture. Sites are small and scattered, resembling in general characteristics Archaic sites of the Eastern Woodlands. The presence of tubular pipes of pottery suggests that tobacco may have been in use.

During succeeding centuries, small villages of pottery-making horticulturalists to come occupy the banks of the Amazon and Orinoco rivers and their major western tributaries. Aside from the simple, utilitarian pottery, sometimes decorated with incision, punctuation or small modelled appendages, artifacts were predominantly of perishable materials that have not survived exposure to the tropical climate. What evidence does exist suggests that the pattern of life resembled that of many present-day Amazonian Indians, who also live in scattered autonomous villages, make simple pottery and derive their sub-

sistence as much from fishing, hunting and gathering as from the produce of their gardens.

By about A.D. 1000, a new ceramic tradition associated with a more advanced type of culture was widely distributed along the Amazon. Although many elements of this polychrome tradition occur earlier in the central highlands of Colombia, not all authorities agree on a derivation from this region. Village sites are much larger than in earlier times, sometimes extending for a kilometre or more along the river bank. On the Island of Marajó, where the best described remains occur, large artificial mounds were constructed for burial, and where necessary to create a land surface above flood level, also for habitation. One of the larger cemetery mounds measures 250 metres long, 59 metres wide, and 6·4 metres high. Several kinds of burial were practised, probably reflecting differences in social status. The simplest are direct interments with no grave goods; the most elaborate are large painted urns associated with undecorated ones, suggesting multiple interment to provide companions for an important individual in the next world. Small stools, tangas or pubic coverings, ear spools, spindle whorls, rattles, whistles and figurines are among the ceramic objects found predominantly or exclusively in burial mounds.

The pottery shows a sharp dichotomy between domestic vessels, with utilitarian forms and predominantly plain surfaces, and mortuary vessels, with varied shapes and beautiful decoration. One complicated decorative technique involves the application of two layers of fine clay or slip, first white and then red, and subsequent incising or excising through the red to reveal the contrasting white surface; another consists of incision on a white-slipped surface followed by coating of the incisions with red. Intricately excised designs on red-slipped vessels often have the excised zones retouched with white, heightening the visibility of the pattern. Low relief snake and lizard figures are sometimes incorporated, but the most common modelling is anthropomorphic. Burial urns, stools, and ornate small vessels usually have a stylized human face on one side, often with a weeping eye. The most common technique of decoration was painting in red and black on a white-slipped surface.

The use of anthropomorphic urns for burial, and many of the decorative techniques characteristic of this Marajoara culture on Marajó, have been reported at numerous sites along the Amazon, as well as on one of its western tributaries, the Rio Napo. The occurrence along the middle Amazon of different kinds of vessel shapes and greater emphasis on modelled decoration may reflect difference in antiquity or influences from Venezuelan modelled ceramic styles. This regional variability is comparable to that characteristic in the North American Woodlands during the Hopewellian or Mississippian periods, and in both areas probably reflects the adoption of cultural traits of predominantly ceremonial significance without formal political integration of the peoples affected.

Before the time of European contact, the polychrome style was replaced along the lower Amazon by another ceramic tradition, this time with probable

affiliations to the Caribbean area. The most exuberant expression occurred in the vicinity of Santarem and the Rio Tapajoz, on the right bank of the Amazon, where anthropomorphic and zoomorphic adornos were applied to pottery vessels of peculiar form, creating a strikingly rococo effect. (Fig. 52.) Such vessels were clearly made to be seen rather than used. Other indications of ceremonialism take the form of polished greenstone amulets, many representing frogs, and small pottery figurines of highly stylized execution, including

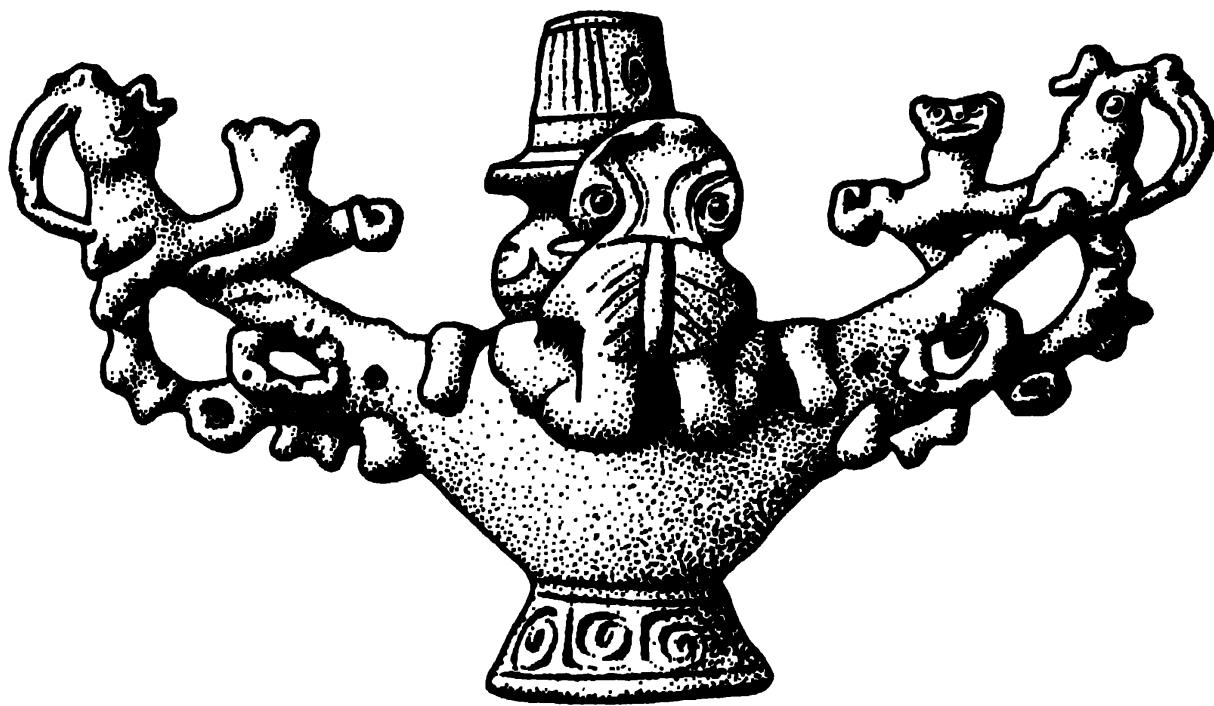


FIG. 52. Pottery vessel from the Santarem area with 'rococo' embellishment characteristic of this late period ceramic style on the lower Amazon. Height 18 cm. (after Helen C. Pamatary).

one-legged examples. European visitors around the middle of the seventeenth century reported ceremonial activities in which idols were kept in temples and entreated with offerings of maize, and strange looking stone carvings occasionally found in the area (Fig. 53) may have been made for this purpose. The chroniclers also report bustling towns of 500 or more families, where brisk trading took place in ducks, hammocks, fish, flour and fruit. The Tapajoz Indians were feared by neighbouring groups because of the efficacy of the poison that tipped their arrows. This reputation also led them to be avoided by Europeans until more accessible sources of slaves were too depleted to be profitable, but before the end of the seventeenth century, the aboriginal way of life had disappeared from the banks of the Amazon.

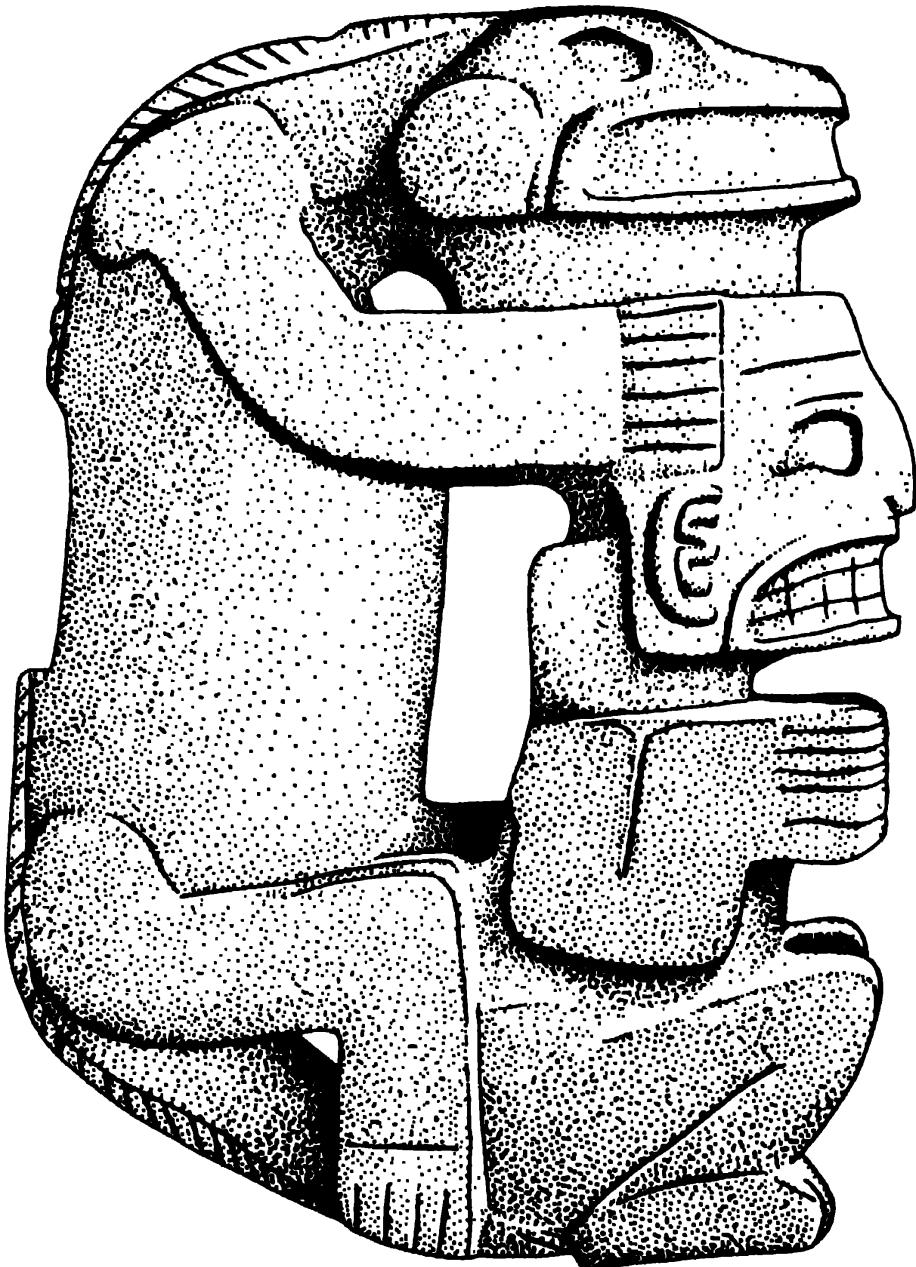


FIG. 53. Stone sculpture of a human being held by an animal.

13. THE PLAINS

Eastward from the base of the cordillera, north of approximately 30° in North America and south of the same latitude in South America stretch vast grass-covered plains. Although characterized by relatively slight relief, the land surface rises gradually towards the west. Concomitantly, average annual rainfall decreases from about 760 millimetres to 380 millimetres. As a consequence of differences in precipitation and elevation, tall grass dominating the eastern plains gives way to short grass toward the west. The tall grass zone is broken

by rivers and streams with forested banks, providing shelter from the winds that race across the plains; in the more arid short grass prairie, springs are a more typical source of water. In North America, the grassland was the habitat of the bison, antelope and deer, and in South America of the guanaco and rhea, while the wooded ravines supported a variety of small mammals and birds. In both areas, human adaptation was transformed by the introduction of the horse by Europeans in the late sixteenth century.

The greatest difference between the northern and southern plains is in respect to climate. In North America, their location in the centre of the continent, remote from the ameliorating influence of the oceans, results in extreme variation between hot summers, when the temperature may rise to 43°C. and cold winters, when it drops well below freezing. Although winters are warmer towards the south, no place is free of frost. The climate of the Argentine Pampa, by contrast, is moderated by the adjacent Atlantic Ocean. The temperature for the warmest month averages around 24°C. and although winter brings frost, the average temperature is above freezing. This milder climate might be expected to have made the southern plains more attractive for aboriginal settlement than those of North America, but present archaeological information does not bear this out. A possible explanation lies in the differential accessibility of the two areas to centres of higher cultural development, and their consequently unequal opportunity to acquire potentially useful innovations.

A. The North American Great Plains (Map XXVIII, Area 5A.)

The interval between the disappearance of Paleo-Indian culture and the introduction of pottery making is little known on the North American plains. It is probable that the pattern of life during this time continued to be essentially nomadic, and small groups of hunters and gatherers almost constantly on the move would leave little for the archaeologist to find. In especially favourable locations, which were repeated sites of winter camps, preceramic remains have been found, attesting to man's continuing presence.

The record becomes clearer with the introduction of pottery from the Eastern Woodlands about 500 B.C. From this time onward, the inhabitants of the tall grass plains continued to be influenced by developments taking place in the Mississippi Valley. The Hopewellian expansion is reflected between about A.D. 200 and 400 by the introduction of maize and bean cultivation, platform pipes, copper and obsidian, pottery with rocker-stamped decoration, and innovations in burial pattern, including the erection of small earth mounds over a tomb. Houses were of perishable construction, leaving little archaeological trace, but storage pits are a recurring feature. Hunting and fishing still contributed importantly to the diet, as did the gathering of wild fruits and berries.

A more pronounced cultural change took place about A.D. 1000, probably

deriving its impetus from ideas emanating from the expanding Mississippian culture. Large earth lodge villages spread over the bluffs and river terraces, reflecting a more sedentary community pattern supported by the cultivation of maize, beans and squash on the adjacent flood plain. Early earth lodges were square to rectangular in floor plan, usually 5 to 9 metres long. The sod was removed to lower the floor slightly, and four posts were erected to support the roof, which was constructed of successive layers of twigs, brush, grass and earth. A narrow passage at one end served as the entrance, and a small hole in the centre of the roof allowed the exit of smoke from the fire pit below. Over the centuries, villages grew from three or four haphazardly arranged houses to between six and twenty dwellings and a population estimated between fifty and 300 inhabitants. In later times, there was sometimes a surrounding defensive ditch and palisade. Bell-shaped pits, with a small opening and an expanded bottom, were used to store grain and other preservable food. The dead were buried in cemeteries or large ossuary pits adjacent to the village.

Hunting still contributed importantly to subsistence, and it is probable that at appropriate times of the year a large portion of the community set forth on hunting expeditions to bring back a store of bison meat to last over the winter. Artifacts like bone awls and needles, stone scrapers and knives, were used to prepare skins and manufacture them into clothing, containers and a variety of other items of daily use. Stone arrowheads, bone fishhooks and bison scapula hoes attest to the multiple nature of subsistence activities. Shell pendants, polished stone beads and pipes, and bone gaming pieces reflect the lighter side of life. Pottery vessels with rounded body, constricted mouth, thickened rim and plain or cord-marked surface are characteristic. The elaborate Mississippian ceremonialism is little evident on the plains, and marked regional variation is characteristic throughout the prehistoric period.

After A.D. 1500, villages along the major watercourses increased in size to fifty or more houses, while those along lesser streams disappeared. Earth lodges became circular, and large in average diameter, some exceeding 16 metres. (Pl. 63, b.) Such evidence of increased population concentration implies intensification of agriculture, an inference also supported by proliferation in the number of storage pits per village. This period of florescence was cut short in the early nineteenth century, when the introduction of European diseases and the raids of equestrian hunters from the west and north devastated the village farming communities.

While the occupants of the tall grass plains were advancing toward increasingly sedentary life, those in the western part of the area remained hunters and gatherers. Archaeological sites consist of camping places with hearth remains and a few scattered artifacts, rock shelters, cairns, stone alignments, quarries, workshops, and pictographs. Stones laid in circles are frequently encountered, some of which mark the location of tipis or conical pole and skin tents, having been used to weight down lower the border in the absence of stakes. Before the introduction of the horse, hunting range was

limited and camp had to be moved frequently for maximum accessibility to game. Dependence on hunting is reflected in the material culture remains, which consist principally of chipped stone projectile points, knives, scrapers and choppers. A few pottery vessels and soapstone bowls were also made and used.

Two centuries after Coronado's expedition first explored the southern fringe, the horse had been adopted over most of the plains, transforming relatively primitive hunting bands into large tribes whose prowess in horse thievery and warfare made them the scourge of European settlers, and whose spectacular feather head-dresses and ceremonialism have caused them to be identified in the popular imagination as the typical American Indians. Post-European Plains Indian culture was so marvellously adapted to the horse that it is frequently assumed to be a wholly recent development. However, when members of the Coronado expedition discovered the plains in 1541, they encountered ' . . . people who lived like Arabs . . . in tents made of the tanned skins of the cows (bison)', who 'conversed by means of signs . . . so well that there was no need of an interpreter', and who moved camp 'with a lot of dogs which dragged their possessions' (Winship, 1896, pp. 504-5). The pole and buffalo-hide tipi, the travois, and the famous sign language, which are among the diagnostic elements of the historic period, were by this testimony part of the pre-horse complex. It seems probable, therefore, that rather than being a totally or even largely post-European development, equestrian hunting culture was a florescence made possible by the addition of the horse to a group of traits developed over millenia of learning to live in the plains environment. The fuel was ready; the horse was the tinder that struck off the blaze.

B. The Argentine and Uruguayan Pampa (Map XXVIII, Area 5B.)

Whereas some 10,000 archaeological sites have been reported on the North American plains, reconstruction of the sequence of cultural development on the South American grasslands must be based on a sample perhaps a hundredth of this size. The small amount of data available suggests a dichotomy similar to that in North America between more sedentary pottery making groups along the Paraná and other principal rivers, and wandering hunters of the open plains. Non-ceramic sites are characteristic along the coast, and although some are of considerable antiquity, others represent groups still living by hunting, fishing and gathering at the time of European contact. Archaeological remains found throughout the pampa include stone projectile points and bola stones used in hunting, stone scrapers and knives, and bone awls and punches used for working hides; hammerstones, mortars and pestles used for the preparation of flour from dried fish; ornaments of shell and polished stone. Containers included simple rounded bowls and jars of pottery, sometimes decorated by incision, drag-and-jab zoned punctuation or painting. No evidence remains of dwellings, but information from ethnographic sources indicates that a tem-

porary lean-to of poles and mats or brush, or a windbreak of animal skins was the typical shelter. Both primary and secondary burial are reported, without accompanying offerings. With the exception of pottery, most of the archaeological remains suggest a way of life essentially the same as that during the Intermediate period. In contrast to the North American plains, ethnographic data do not significantly alter this interpretation. None of the portable camping gear seems to predate introduction of the horse; dogs were used for hunting but not for traction. As a consequence, although acquisition of the horse made hunting easier, and probably accelerated the pace of warfare, it did not catalyse a cultural florescence equal to that on the North American plains.

Several groups near the Paraná River were practising agriculture when first seen by Europeans. Although this way of life is certainly aboriginal, it may not be of great antiquity. Maize cultivation, corrugated and painted pottery, and palisaded villages, which are among the characteristic traits, made their appearance on the south coast of Brazil after about A.D. 500. Their introduction to the lower Paraná region is not likely to have been earlier, and may have been more recent. The failure to reach a level of development here comparable to that of the North American plains farmers may be less a consequence of environment than of geography. The North American plains are penetrated by numerous tributaries of the Mississippi River, along which cultural diffusion readily passed. By contrast, the Paraná River system drains a region of marginal cultural significance. In the Desert area to the west, more complex levels of development were attained, but little influence can be detected from this direction. In North America, where a similar juxtaposition exists, few traits entered the plains from the South-west, suggesting the existence of a kind of cultural incompatibility probably resulting from adaptation to totally different types of environment.

14. THE PACIFIC COASTS

Along the Pacific coasts of the United States, western Canada, and Chile narrow strips of land are squeezed between the mountains and the sea. This geographical and topographic similarity is accompanied by similarities in climate and vegetation. Between about 40° and 60° N latitude, and between about 43° and 48° S latitude, the coast is a maze of islands, tortuous channels and deep fiords. Rainfall is heavy, damp cloudy days are typical, and the land is clothed in dense rain forest. In addition to fish and shellfish, sea mammals such as the seal and whale are potential sources of food. Proceeding towards the equator, rainfall diminishes almost to zero, and the dense rain forest gives way to deciduous and ultimately xerophytic vegetation. In southern California and northern Chile, rainfall is negligible or absent in certain areas. This arid portion of the coast is occupied by a low coastal range, which defines the western edge of a long valley bounded on the east by the cordillera rising to

above 5,000 metres. Rivers are dry except during flash floods, making irrigation difficult and minimizing the possibility of agriculture without elaborate water transportation techniques.

Overriding these fundamental geographical resemblances are differences in wild food resources that played a crucial role in aboriginal cultural development. On the North-west Coast of North America, lying principally within the boundaries of Canada, innumerable streams and two major rivers cascade from the mountains to the sea. These served as spawning ground for salmon, which constituted a subsistence resource of fantastic abundance. The adjacent seas contain halibut, cod, herring and smelt in such numbers that they remain favoured commercial fishing grounds to the present day. Seal, otter, porpoise and whale also inhabit the waters, and deer, elk, mountain goat, and smaller mammals roam the land, providing a varied potential source of meat. Berries, nuts and other wild plants were also bountiful in season. Farther to the south, increasing aridity brought changing vegetation, including the appearance of oaks whose prolific acorn harvest became the subsistence staple food of the local population. On many parts of this coast, wild food gathering conditions were so productive that cultural development could attain levels reached elsewhere only after the introduction of agriculture. The California coast, which represents only about 1 per cent of the land north of Mexico, is estimated to have supported some 10 per cent of the population at the time of the Conquest. Villages of up to 1,400 people compare favourably in size with those of agriculturalists in the adjacent Desert area.

By contrast, wild food gathering conditions of the Chilean coast were much less favourable. Although some of the same sea and land mammals occurred, the most productive North American resources were absent. Without the moderating influence of the Japan Current, which maintains temperatures on western Canada above freezing, frosts and snows accompany winter cold. The Chilean coast is also isolated from major diffusion paths, so that few new techniques, customs or ideas reached the inhabitants. However, the environmental limitations to increased population concentration are severe enough to make it doubtful that greater accessibility would have permitted a significantly higher level of cultural development.

A. The North Pacific Coast (Map XXVIII, Area 6A.)

Between 2000 and 1000 B.C., increasing specialization toward exploitation of the most productive kinds of local food resources begins to be evident on the Pacific coast of North America. In the southern portion of the area, village sites are larger than in earlier times and suggest increased sedentariness. The appearance of stone mortars with basketry tops, a utensil used in preparation of acorns, indicates concentration on this plant food. Hunting, fishing and shellfish gathering continued to be exploited, as reflected in a greater variety of chipped stone implements and the appearance of barbed harpoon points.

Stone was less utilized than in earlier times, its place taken by bone, which was employed for the manufacture of whistles and tubes as well as awls.

After the beginning of the Christian era, stronger contrasts emerge between the shore dwellers living principally from the resources of the sea and inhabitants of the central valley, who specialized on plant foods. In addition to specialized tools, such as circular shell fishhooks, burins, steatite bowls, large mortars and pestles, and obsidian projectile points with serrated edges, a wide variety of ornaments of stone, bone and shell become characteristic. Incised bird bone tubes, tubular steatite pipes and polished stone sculpture (Fig. 54) also occur. Dome-shaped circular houses, 4 to 7 metres in diameter, were constructed of poles covered with grass. Each village also had an earth-covered semi-subterranean sweat house. Traces of influences from the Desert area to

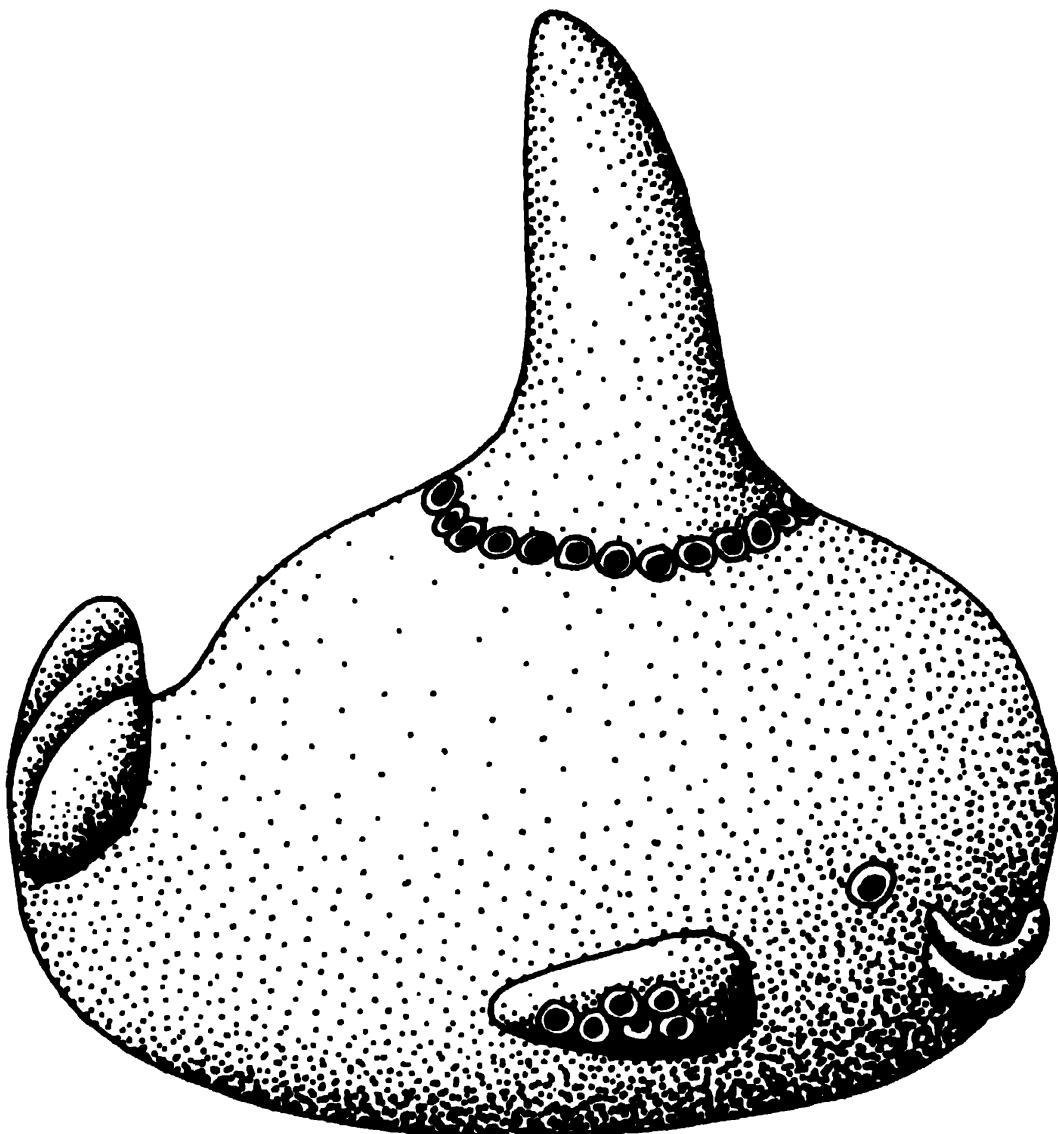


FIG. 54. Killer whale effigy carved from steatite and inlaid with shell beads (after Gordon R. Willey). Length about 10 cm.

the south-east can be detected particularly in the introduction of pottery, but differences in the environmental resources, and the closeness of adaptation to wild food subsistence, apparently made most items of South-western culture irrelevant or incompatible. In the interior valley, technology remained simple. Seed grinding tools, chipped stone knives, scrapers, and projectile points change form through time, but fulfil essentially similar kinds of function. Basketry, cordage and other kinds of perishable artifacts have been preserved in dry caves, attesting to the importance of these kinds of objects and to the skill that was attained in their manufacture. At the time of European contact, basketry had been developed to a high degree of artistry, and in the absence of cotton was used even for the manufacture of certain articles of dress.

While the arid portion of the Pacific coast reached a high population density in late aboriginal times, it was the wetter northern portion where the cultural climax occurred. Here, a remarkably prolific wild food supply provided the prerequisite subsistence stability and Asiatic influences furnished the catalyst for the development of a striking cultural configuration, particularly renowned for its magnificent art style. (Fig. 55.) As early as 1000 B.C., specialized exploitation of sea mammals can be inferred from the presence of projectile points of shell, bone, antler and ground slate, some with smooth edges, others barbed along one side. In the wet climate, few other artifacts are preserved except small nephrite adzes and chisels, suggesting beginnings of wood working, and ornaments like polished stone labrets and ear spools. By 200 B.C. large adzes and stone mauls become increasingly common. Such tools were employed for the cutting of planks for house construction and for the manufacture of dugout canoes, implying the presence of these essential ingredients of later North-west Coast culture by this time. Larger population concentrations and increase in the type of luxury goods, such as ornaments of native copper, caches of beads, and examples of stone sculpture, reflect accentuation of differences in status and wealth. Small earth and stone burial mounds about one metre high, constructed over a single partly cremated burial, may date from this time, but the rarity of grave goods makes their temporal identification uncertain.

Archaeological sites dated between A.D. 1200 and A.D. 1600 clearly reflect the existence of many perishable elements of historic North-west Coast culture. Heavy antler and bone wedges and stone mauls used in wood working are common. Zoomorphic clubs, tubular steatite pipes, and stone bowls exhibit what must be a pale reflection of skills expressed in perishable materials. If the culture had not survived to be described by European travellers and later by ethnographers, the material remains would be insufficient to permit reconstruction of the social stratification, complicated rules of economic competition, mythology and ceremonialism that has intrigued all who have become aware of their existence. Although contrasts of such an extreme nature between the content of a living culture and the surviving archaeological remains may not be typical, this example underlines the limitations of the archaeological



FIG. 55. Haida painted thunderbird design, showing bifurcation characteristic of the art style on the north-west coast of North America in the late period.
(after Miguel Covarrubias).

record and emphasizes the fact that even where preservation is relatively good, much more once existed than has been left behind.

B. The South Pacific Coast (Map XXVIII, Area 6B.)

One of the difficulties in correlating the archaeological sequences of the Chilean coast with those of neighbouring areas is the absence of absolute dates. Nonceramic sites abound in the arid northern region, some of which are of great antiquity but others of which probably reflect survival of groups with simple technology until recent times. As in North America, increasing specialization on seafood resources is evident in the appearance of shell fish-hooks and bone harpoon heads, while small stemmed stone points were used on darts and other projectiles. Stone bowls are characteristic, as are scrapers and other percussion flaked stone tools. With the passage of time, thorn fish-hooks replace those of shell, harpoon heads assume different forms, triangular

projectile points become popular, and new kinds of stone objects, including bola stones and cigar-shaped sinkers, imply improvements in hunting and fishing methods.

Around the beginning of the Christian era, agriculture, pottery making, weaving, coiled basketry, metallurgy and other central Andean traits were introduced to the coast. Although conditions favourable to agriculture were restricted to scattered oases, maize, gourds and later potatoes and beans were raised in limited quantities. Small villages composed of rectangular stone-walled houses enclosed by a defensive wall occur on rocky outcrops near land suitable for farming. Subterranean storage bins and granaries in the house corners, as well as large mortars and metates, attest to dependence on maize. A variety of grave types are associated, including stone-lined pits and pit-and-chamber forms. In the Arica area, various kinds of objects were manufactured in miniature for burial purposes, such as pottery vessels, bows and arrows, rafts and paddles, reed mats and loom sticks. Gourd containers, composite combs, spindles, adzes and coca bags are other items frequently placed with the dead. Tiahuanaco influence has been noted in the appearance of polychrome painted pottery, but bessel forms in general are more similar to Argentine than to Peruvian ones.

In the more humid zone to the south, the cultural retardation is even more apparent. The prodigious fish supply of the North American sea and rivers was missing, so that food getting was much more time consuming and laborious. As a result, settlements remained small and houses were of primitive and impermanent construction. Stone and shell adzes were used to cut planks for boats, which required constant bailing to remain afloat. Satisfaction of daily needs left little time for other activities and only special and temporary circumstances permitted gatherings larger than extended family groups. In contrast to the situation on the North-west coast of North America, the extreme simplicity of archaeological remains here appears accurately to reflect the cultural simplicity of the area, whose primitive inhabitants were described by Charles Darwin in the nineteenth century, as well as by more recent visitors.

15. THE MARGINAL AREAS

Certain interior portions of the New World are unsuitable for intensive agriculture for one or more of a variety of reasons, such as too much or too little moisture, too short a growing season, unsuitable soil conditions or too low average temperature. In some of these areas, human habitation was dependent on exhaustive exploitation of wild food resources; in others, incipient agriculture could provide supplemental rations. In such regions population density remained very low, and ways of life characteristic of the Intermediate period were preserved until European contact.

In North America, continental width increases toward the pole with the

result that a large land mass stretches into the latitudes where shortness of the growing season makes agriculture impossible. (Map XXVIII, Area 7A.) Hunting, fishing and gathering resources are good but not concentrated, so that small groups could support themselves only by remaining relatively mobile and exploiting all available foods. A similar situation existed in the plateau and basin area of the north-western United States, a region of hot summers and cold winters, of extreme altitude variation and limited rainfall, which has been described as one of the most difficult areas in the world for human use.

Because continental width diminishes in South America as latitude increases, areas with marginal agricultural potential are smaller and more scattered. The largest is in the upland region of eastern Brazil, where fluctuation in the amount of annual rainfall makes farming undependable. (Map XXVIII, Area 7B.) The swampy lowland of the Gran Chaco, portions of which lie in Paraguay, Bolivia and Brazil, is another area where hunting, fishing and gathering remained the primary subsistence pattern until post-European times.

Few of the Marginal areas have attracted the attention of archaeologists for an obvious reason: The cultures occupying them were poorly endowed with tools and utensils of non-perishable nature, and those that did exist are relatively undistinctive. Moreover, the wandering way of life has prevented accumulation of remains, so that sites are difficult to find, and when found produce a minimum of archaeological evidence. The best known archaeological sequence is that from the North American basin-plateau, where a generalized 'Desert' type of culture persisted from late Paleo-Indian times until the present. Changes can be observed in the size and form of projectile points, in the presence or absence of specific kinds of shell ornaments, bone tools or pottery, but as one authority has pointed out, 'the minor but perceptible changes of the past two thousand years in the material culture of the Basin tribes argue less for change than for stability'. (Jennings, 1964, p. 168.) When the patterning of movement of family groups to successive collecting grounds for the harvest of seasonally available seeds and berries, to hunting areas and to sheltered winter camp sites is plotted on a map, the annual round of the Paiute and Shoshone looks very similar to that reconstructed for inhabitants of the Tehuacán Valley in central Mexico during El Riego Phase, dated between 6800 and 5000 B.C. The settlement pattern described for Brazilian Marginal tribes, like the Timbira, who spend the dry season roving in search of wild food and part of the rainy season encamped where they can plant small gardens and reap their harvest, sounds much like that inferred for the succeeding Coxcatlán and Abejas Phases, characterized by incipient agriculture and dated between 5000 and 3000 B.C.

Early students of American Indian culture noted another curious fact about the most primitive peoples of North and South America, namely that they shared a considerable number of cultural elements that were absent or sporadic in the intervening region. Nordenskiold (1931), who devoted the

greatest attention to this phenomenon, compiled a list of sixty-four such traits, which has been expanded by other investigators (e.g. Cooper, 1941; Ehrenreich, 1905; Métraux, 1939; von Hornbostel, 1936). Although some are of a technological nature, such as bark containers and fish glue, the overwhelming majority are in the realm of mythology, music, religion, ritual and recreation. Some legends, including a series dealing with the exploits of a trickster, are amazingly similar. The best explanation for the existence of these traits in such widely separated regions is that they formed part of the basic culture spread over both continents during the Intermediate, or perhaps even the Paleo-Indian period, and have survived among those groups whose general way of life perpetuates that of earlier times. French and English trappers, miners and explorers who encountered these Indians in western North America in the nineteenth century described their existence in disparaging terms. In the words of one, 'The Indians of Utah are the most miserable, if not the most degraded, beings of all the vast American wilderness. . . . They live almost always on roots, seeds of indigenous plants, lizards, and field crickets; at certain seasons they have fish in abundance; this period of plenty once past, they remain in dreadful destitution'. (Domenech, quoted by Steward, 1938, pp. 9-10.)

16. TRANSATLANTIC CONTACT

As is true in the Pacific, currents in the Atlantic Ocean could have propelled a drifting craft to the shores of the New World in prehistoric times. As was the case in Asia, cultures of the Mediterranean area were sufficiently advanced long before the beginning of the Christian era to construct fleets of ships and send them on trading, exploring and colonizing voyages. Later, the Vikings successfully colonized Iceland and Greenland, and continued to North America, where they established at least one temporary settlement on northern Newfoundland. Long and acrimonious debate preceded discovery of archaeological evidence to support claims for the Viking discovery of America, and the successful outcome of this battle is likely to encourage proponents of earlier contacts to renew their efforts.

The problem of establishing the existence of transatlantic contact in prehistoric times is complicated by the relatively low level of cultural development attained along the eastern portions of the Americas. Particularly on the coast, the indigenous population was typically sparse and only temporarily sedentary. Communities were small, social stratification was minimal or non-existent, and religious observances were simple. Consequently, the possibilities for adoption of ideas, techniques or even art motifs from civilized peoples were slight. In contrast to the transpacific arrivals in the Nuclear Areas, who would have encountered even at an early time cultures with complex technology, class structure and elaborate ceremonial practices, and which were consequently receptive to new ideas, transatlantic voyagers would have met groups similar

to, or more primitive than, those first sighted by Columbus. Mixture between cultures of such unequal development is as difficult as mixing of oil with water. A few articles exchanged would soon be lost or worn out, and their discovery by an archaeologist would be almost miraculously good luck.

Nevertheless, the possibility of transatlantic influences on New World cultures cannot be ignored in the reconstruction of western hemisphere pre-history. Intriguing parallels like those between tools of the Archaic 'Old Copper Culture' and Old World types (see page 878) have to be explained, and the tenuous nature of the evidence makes it probable that the pros and cons of transatlantic contact will continue to be debated for a long time to come.

17. THE ARCTIC

The only ecological zone without a South American counterpart is the Arctic (Map XXVIII, Area 8), the last refuge of the vast ice sheets that once covered much of North America. In this forbidding region, which extends northward from the tree line (about 60°N latitude), seasons are marked by changes not only in temperature but in sunlight and darkness. Between sunset in late November and sunrise in early February, the icy landscape is shrouded in night. In midsummer, by contrast, one day blends into the following one, the temperature rises above freezing, and widespread melting transforms the frozen tundra into an impassable bog. Although it appears forbidding to the outsider, the arctic sustains a varied and relatively abundant fauna, including seal, walrus, whales, polar bears, caribou, elk, small game, birds and fish.

This unique and demanding environment, extending some 3,000 miles from the Bering Strait to Greenland, is occupied by the Eskimo, who differ racially, culturally and linguistically from the other inhabitants of the New World. Their cultural roots appear to lie in the Arctic Small-tool Tradition, which makes its appearance in the Bering Strait region after 5000 B.C. The name derives from the small size of characteristic stone tools, which were produced by fine pressure flaking from blades. Both the technique of manufacture and the presence of specific implements like burins, microblades and side blades, ally this culture with the Eurasian Mesolithic, and indicate that it constitutes a late surviving variant of the Mesolithic way of life. The absence of evidence for permanent shelters in sites of this period in the Bering Sea region suggests that sea mammal hunting was a summer activity, and that winters were passed in more sheltered places in the interior where caribou could be killed.

The appearance of the Old Bering Sea complex around 1000 B.C. marks the inception of fully maritime Eskimo culture, characterized by primary year-around dependence on sea mammal hunting. Rectangular houses about 6 metres square were constructed with a stone floor and driftwood walls and roof. Heat conservation was enhanced by entrance through a passage up to 5 metres long. Since the permafrost allows no decay, innumerable by-products

of daily life are preserved in habitation refuse. In addition to chipped chert and rubbed slate points and knives, slate ulus or semilunar knives, and stone drills, scrapers and adzes, quantities of bone and ivory objects have been encountered, such as barbed harpoon points, snow picks and wedges, awls, needles, buttons, pendants, combs, ice creepers, spoons, buckets, and other articles, intermixed with sea mammal, bird and fish bones. Pottery with linear stamped and paddle-applied check-stamped surfaces appears about 500 B.C. on the northern shores of the Bering Sea. Although allied by technique of surface treatment with the widespread northern stamped ceramic tradition, Eskimo pottery is too late to have served as a stepping-stone in the diffusion from Asia to eastern North America. It never competed successfully with containers of stone and skin, and became thicker, and cruder with the passage of time.

The site of Ipiutak, near Point Hope, Alaska, represents maritime Eskimo culture about the beginning of the Christian era. More than 600 houses were arranged in a series of rows over a kilometre long. They were 3 to 6 metres square, with rounded corners, and had walls and roof constructed of logs covered with sod. Earth benches along the sides served for sleeping. Inland from the village was a large cemetery covering some 4 kilometres, containing two kinds of interment. Some individuals were placed in log coffins with few grave goods; others occupied shallow graves probably once covered with logs and were accompanied by numerous elaborately carved ivory objects. These include not only practical items such as snow goggles, harpoon sockets and knife handles, but ritual elements like parts of masks, linked chains, and sculptures of real and mythical animals, all manufactured with great skill and artistry. The use of two or more parallel lines drawn with precision to create geometric patterns on flat surfaces is a distinctive component of the art style. (Fig. 56.) The application of artificial ivory eyes, nose plug and mouth cover to the corpse to prevent escape of the soul, as well as the presence of linked chains and swivels, which form part of shamanistic paraphernalia in Siberia, give time depth to certain religious beliefs and practices.

During the first eleven centuries of the present era, the Bering Strait maritime variety of Eskimo culture spread up the Arctic coast as far as Point Barrow. As the flamboyant art style decayed, a number of useful items were added to the already crowded inventory of tools and weapons. Notable among the latter were slat armour and the composite sinew-backed bow with its accompanying wrenches and wrist guard, imported from Siberia about A.D. 800. Other significant Siberian imports were two types of large sleds, which supplemented existing smaller sleds and toboggans, and probably mark the introduction of dog traction. A crucial element of maritime Eskimo culture was light-weight tailored clothing, sewn from caribou, bird or polar bear skin, which was designed to provide both the insulation necessary at low temperatures and ventilation for escape of moisture from the skin and inner garments. Neglect of the latter feature allows accumulation of ice, and ignorance of its

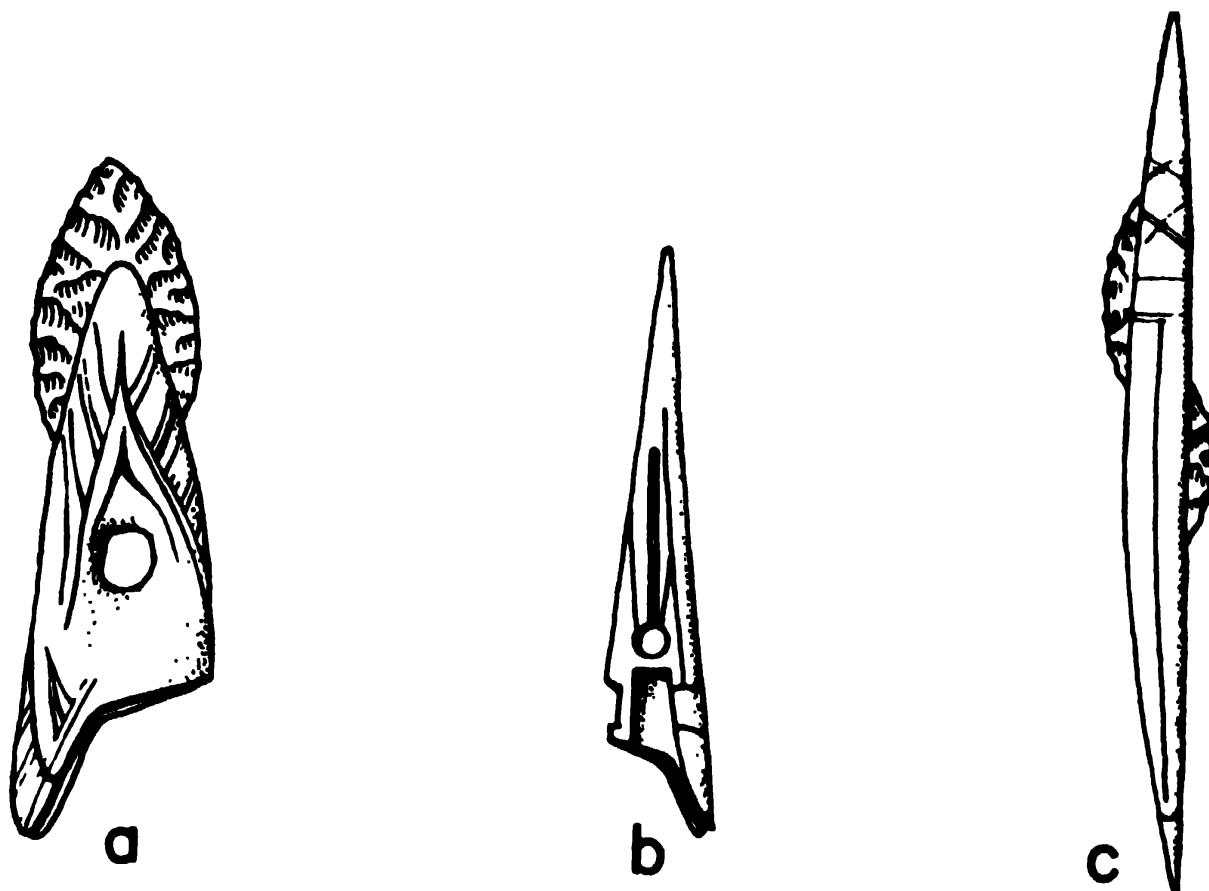


FIG. 56. Bone projectile points of the Ipiutak culture. Incised decoration of paired lines is typical of the Old Bering Sea style (after Gordon R. Willey).

importance caused the death of many early European explorers of the Polar region.

While the inhabitants of the Bering Strait were becoming increasingly specialized to the hunting of walrus and other sea mammals, eastern Canada, Newfoundland and Greenland were occupied by people of the Dorset complex. The material culture inventory combines tiny arrowheads, microblades, miniature needles and harpoon heads derived from the Arctic Small-tool Tradition with new elements, such as multibarbed bone fish spears, snow knives, ulu-like bone knives and bone sled shoes. Circular or rectangular houses with stone and turf walls occur at some sites; at others perishable structures of poles covered with skins may have been used. Although seal was the principal staple, birds, salmon, small game and caribou were exploited at different seasons. In contrast to other Eskimos and most Indians, the Dorset people did not have dogs.

The striking homogeneity of modern Eskimo culture derives from the pan-Arctic spread about A.D. 1200 of the Thule culture, which seems to have developed in the central Canadian Arctic. Millenia of coping with a hostile environment, and the circumpolar interchange of ideas, brought into being

many inventions of remarkable efficiency. The Eskimo lamp, which provides a maximum of heat from a minimum of fuel, is one example. Another is the two-layered clothing, which increases insulation without adding bulk. Ingenious use of non-edible parts of animals is manifest in many articles of daily use, from kayaks to bladder floats. In fact, if all objects made from skins, bone and ivory were eliminated, little would be left of Eskimo material culture. The dog sled remains the most efficient means of land transportation that has been devised. The snow igloo provides life-saving emergency shelter on trackless wastes of ice. In short, although modern Eskimo culture incorporates many Old World elements of considerable antiquity, it is a unique and recent product of cultural evolution rather than a survival of an ancient way of life.

18. THE IMPORTANCE OF NEW WORLD ARCHAEOLOGY

The process of aboriginal New World cultural development came to an abrupt halt with the influx of European soldiers, priests, explorers, and colonists after A.D. 1492. In some regions, such as the Greater Antilles, the eastern United States and the Argentine Plains, the impact was devastating and the indigenous inhabitants quickly became extinct. In others, particularly the Mesoamerican and Andean highlands, they continue to comprise the bulk of the rural population today as they did in pre-Spanish times, but their culture is a hybrid of indigenous and European ways. Only in a few inaccessible parts of the Amazonian forest does the aboriginal pattern persist. Where 50 million bison once roamed the North American plains, 50 million automobiles now crowd the highways. In North America, rivers have been dammed, forests cleared and hills levelled, so that even the landscape bears little resemblance to that of 400 or even 200 years ago. The hemisphere is dominated by people who trace their history through European antecedents to the ancient civilizations of the Mediterranean and the Middle East, in spite of nearly half a millennium of residence in the New World.

Yet, if we penetrate below the surface, it becomes clear that modern civilization would be a different thing without the discoveries and inventions of the American Indian. Rubber, a crucial ingredient in thousands of devices from supersonic planes to rubber bands, is a New World plant. Tobacco, which provides smoking pleasure to people nearly everywhere, was domesticated in the Americas. Chocolate, one of the world's most popular confections, was an Aztec beverage. Maize in a hundred varieties is the staff of life of millions of people and the source of livelihood of other millions, from cereal manufacturers and raisers of animal feed to circus popcorn vendors. White potatoes have become so important in Ireland they are commonly known as 'Irish', although they were domesticated in the Andes. Cashew nuts and peanuts, avocados and pineapples, beans, squash, sweet potatoes, manioc, tomatoes, and chili peppers are among the other New World plants that form part of the diet of people throughout the world. Thousands owe their health, if not their

lives, to quinine and cocaine, which were discovered by South American Indians. This list could go on much longer, to include fibres, games, articles of furniture and dress, all of which have been so thoroughly integrated into modern civilization that we tend to forget they are not part of our Old World heritage.

Beyond the material impact on our daily lives, New World prehistory has another contribution to make of a more scientific but perhaps ultimately a more significant nature. As world culture increases in complexity, its grip on mankind grows increasingly tight. Nations are impelled along courses over which their leaders have little control, while large populations are helpless to extricate themselves from privation and want. Our only hope is to study this amorphous phantom known as 'culture', to unravel its processes of development and its behaviour, as we have tried to penetrate the secrets of the atom and the cell, and by this knowledge to gain some measure of control over our fate.

To achieve this end, we must be able to investigate not only the culture of the present day, but the course of its development. We must find out how and why things happened when and where they did, and whether each advance was a necessary prerequisite to the one that followed. For this kind of study, we need the New World as well as the Old World, because by examining either one alone we may go wrong. For example, writing is almost universally believed to be indispensable to the development of civilization, but it was unknown to the Inca, who achieved one of the greatest empires of antiquity. The wheel is another invention often cited as essential, but the wheel was never a significant element in aboriginal New World culture. The Maya had the world's most accurate calendar in 1492, but lacked draft animals and iron, other ingredients usually considered crucial to cultural advance. In short, careful comparison of cultural development in the two hemispheres is the only way in which the essential factors can be separated from the matrix, and hypotheses about the relative significance of different situations can be judged.

Although for purposes of general comparative analysis, the processes of cultural development in the Old and New Worlds can be considered separate, their histories were not completely independent. It is now clear that trans-pacific voyagers reached the Americas, probably several times; what is not so clear is how important the elements they may have introduced were for New World cultural development. Were the ideas of plant domestication, pottery making, metallurgy, writing, and other significant traits brought by such immigrants, or were they independently invented in the Americas? The answer has important implications. If basic achievements such as these were made at least twice on this earth, they may be inherent to the evolutionary process, and if biological evolution on another planet has produced a creature comparable to man, the possibility exists that this creature has developed a culture similar to ours. However, if all the basic cultural elements were invented only once, there is no basis for assuming their inevitability. Cultural

evolution on our planet would in this case very likely be unique, and we could not expect it to have an extraterrestrial counterpart.

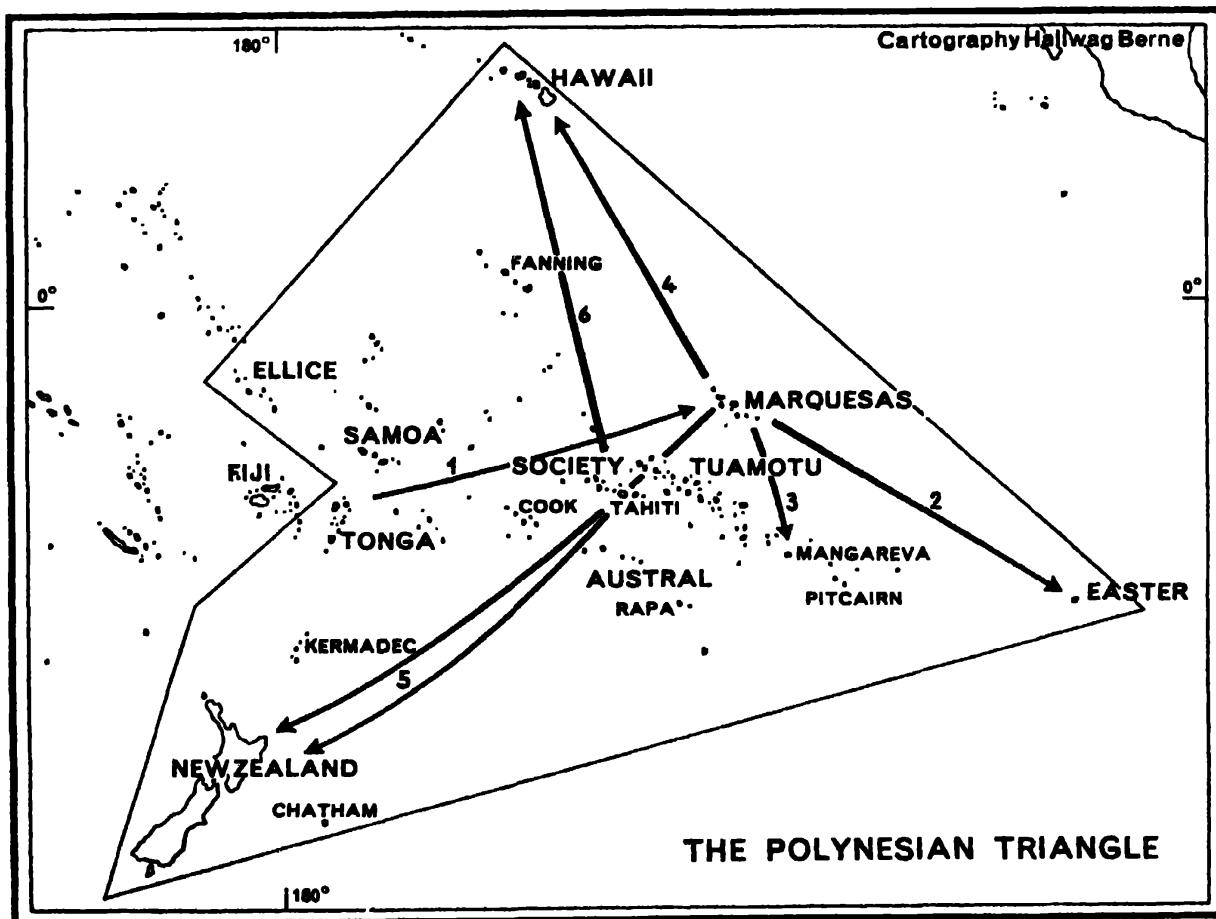
It is an ironic fact that the importance of New World archaeological investigation is becoming recognized at a time when evidence is being destroyed at an accelerating rate. In a few decades, expansion of cities, agriculture, dams and roads will have eliminated many important sites from the record. The farther this process goes, the less chance there will be to reconstruct the details of New World prehistory. If the record becomes too fragmentary to read with confidence, mankind will have deprived itself of one of the most precious keys to self understanding.

CHAPTER XVII

THE NEOLITHIC SETTLEMENTS OF OCEANIA

I. THE AREA, THE PEOPLE AND THEIR CULTURE

By the fourteenth century A.D. the last of the major islands in the Pacific Ocean, within the area known today as Polynesia, had been settled. The events leading to the settlement of Polynesia, which resulted in the colonization of the remaining portion of the world's habitable land, took place in the previous 1,000 to 1,800 years. In fact, within Polynesia the settlement of the more remote and isolated eastern islands occupied much of the time between 600 and 1300. Thus from the perspective of world history many of these specks of land, which dot the central Pacific and form the famous Polynesian triangle (see Map XXIX) were but recently settled. In contrast, much of the rest of



MAP XXIX

the Oceanic world had already long been occupied, in some places as much as ten or twelve thousand years before. As a result, by the seventh century A.D., peoples in the rest of Oceania were not only everywhere well established, but were successfully pursuing a way of life based on cultural patterns whose ultimate origins are to be sought among the Neolithic cultures of eastern Asia, cultures which also laid the foundations for the civilizations of the Far East.

Given the dispersal of the peoples of Oceania among many and varied island environments, together with a subsequent history of contacts with other cultures, and with the usual innovations of their own, it is not surprising to find that, in time, each of the numerous local societies had undergone sufficient change to exhibit many local variations in language, technology, economy, social organization, and religion. This at least was the situation in the sixteenth to nineteenth centuries A.D., when these peoples became known to history through the writings of European explorers, traders, and missionaries. Such evidence as we have suggests this situation extends well back into prehistory, so that it may be taken to apply to the fourteenth century as well. Thus, the brief review which follows of the ethnohistorical and ethnological divisions traditionally made for the peoples of Oceania serves as a background to the more detailed discussion of their prehistory, which is our major concern.

Oceania is normally thought of as including the cultural and geographical areas of Polynesia, Micronesia, and Melanesia. (Map XXX.) It is separated from the east Asian mainland, Japan, and Formosa in the north by a great expanse of ocean and in the south by a world of large continental-type islands such as Indonesia, Borneo, the Celebes and the Philippines which belong culturally and geographically to South-east Asia. In this South-east Asian island world it is assumed, on present rather scanty evidence, that a culture or cultures ancestral to those of Oceania had once prevailed, but by the middle of the first millennium A.D. had already been influenced, absorbed, or replaced as the result of more recent cultural developments which had taken place in China and South-east Asia. Indeed, during the period between 600 and 1300 there is evidence (glass beads, porcelain vessels, and metal tools, weapons and ornaments) that societies in island South-east Asia were directly trading with, and were sometimes even colonized by, people from these centres. When one moves into Oceania, the effects of these contacts, though occasionally still in evidence on the coasts of western New Guinea and the nearer high islands of Palau, Yap and the Marianas in Micronesia, are now much attenuated, while in the rest of Oceania they are scarcely to be found. The result is that Oceania preserves in modified form patterns derived from an ancient Neolithic style of life that has long since been replaced in its homeland.

In the area of Polynesia, the societies distributed among volcanic high island groups and low coral atolls presented a sufficiently similar set of cultures, languages, and physical features for their close relationship to be easily perceived by the earliest European visitors. This deduction has continued to be supported by nearly all subsequent investigations, and has led to a number of

theories about their origins. The best support for their common origin now lies in the records of archaeology and historical linguistics which indicate that such diversification as had taken place, was accomplished largely in isolation over the last 2,000 years, with the greater part having taken place between the sixth and fourteenth centuries A.D. Linguistically, all the languages of Polynesian form a single subgroup of the widespread Malayo-Polynesian or Austronesian language family. Archaeologically the earliest cultures possess an assemblage of adzes, pottery, other tools and ornaments found throughout the Oceanic world. (Pl. 64 a.)

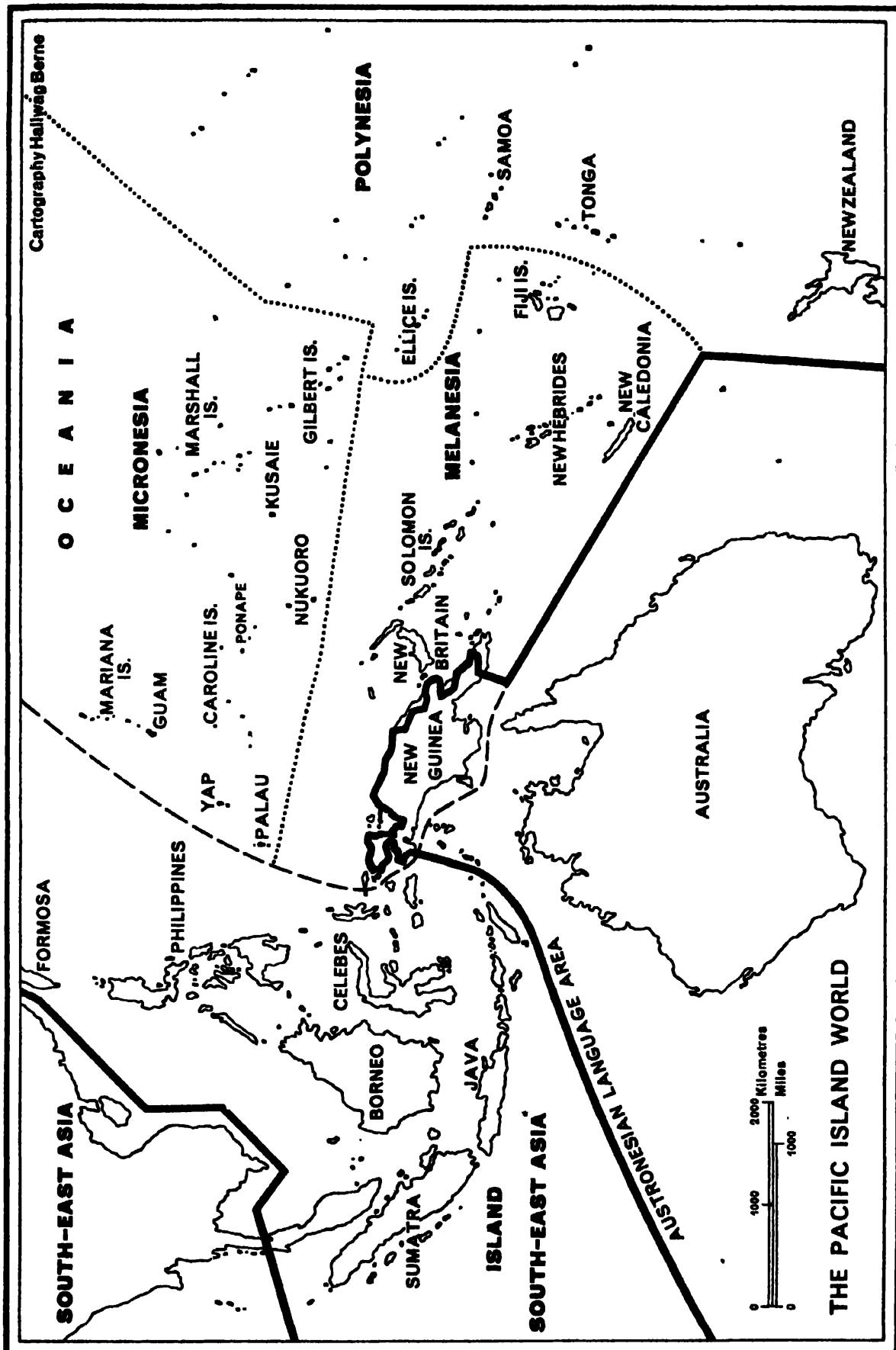
In contrast, in Micronesia where the societies are also distributed among volcanic high island and on numerous low coral atolls, there is far greater diversity in language, culture, and physical form. Thus, in eastern Micronesia, with but few high islands (Truk, Ponape, Kusaie) and many atolls (Marshalls, Gilberts, remainder of the Carolines, etc.), there is a large block of closely related eastern Micronesian languages, and two tiny outliers, Kapingamarangi and Nukuoro, on which Polynesian is spoken. Similarly, the peoples of the outliers are Polynesian in appearance and contrast with the main block of 'trans-Micronesians' which extend from Sonsorol and Tobi in the western Carolines to the Marshalls and Gilberts in the east. Culturally, too, there were differences. From the archaeological record it is possible to show close parallels between the fishing gear and adzes used on the Polynesian outliers and those normally found on other islands of eastern Micronesia and to contrast the material culture of eastern Micronesia with the pottery-using cultures of the larger high island groups (Palau, Yap, and the Marianas) of western Micronesia. In western Micronesia individual languages are far more distant in their relationships to each other, or to other Austronesian languages of Oceania than are those of eastern Micronesia. One also encounters indications, as in Guam, of genetic interchange with people of Mongoloid ancestry, which suggest contact with adjacent areas. Dates from the archaeological record for western Micronesia hinting at a time-depth of more than 1,500 years B.C. for the earliest of the pottery-using cultures, and physical, linguistic and cultural evidence suggesting a diversity of relationships, are all indications of a longer and more complex cultural history of Micronesia than in Polynesia. They also suggest multiple origins for major components of the various local societies of Micronesia.

Melanesia includes not only numerous small volcanic islands and atolls, but also the large island of New Guinea which, like those in island South-east Asia, has a myriad of local environments. As well, there are the less varied, smaller, continental island groups to the east: New Britain, New Ireland, the Solomons, Santa Cruz, Banks, New Hebrides, Loyalties, New Caledonia, and Fiji. It should occasion no surprise, then, that cultural, linguistic, and physical diversity among the resident populations in Oceania was carried to its greatest extent in Melanesia. In Polynesia and Micronesia all the languages belong ultimately to some subgroup of the widespread Austronesian language family.

(Map XXX.) In Melanesia other less widespread, but equally ancient language families are present, though not nearly so well documented. Moreover, it is among the Austronesia languages of Melanesia that one encounters the greatest linguistic differentiation in that family. So great is this differentiation, that at least one recent linguist, as a result of a statistical study of the relationships among all the Austronesian languages, has seriously raised the issue of the homeland of the family as being in Melanesia. However, it is usually assumed to have been in South China and the adjacent offshore islands of South-east Asia. Statistical evidence recently published also favours Formosa, rather than Melanesia.

The non-Austronesian languages of Melanesia are centred chiefly in New Guinea and are often designated by the covering term, Papuan, a term of convenience which lacks the usual implication of a historical relationship among all the languages included in it. Rather, as research advances, major blocks of Papuan languages, for instance in the eastern New Guinea highlands, are being discovered, each with a distinctiveness and time depth that approximates that of the far more widely distributed Austronesian family. In general then, the peoples of Melanesia, in contrast to those of Micronesia and Polynesia, speak languages belonging to a number of families, with those related to the Austronesian family being dominant in the smaller continental island groups to the east and along the north coast and around the eastern tip of New Guinea. Those of the less well documented non-Austronesian families are found almost entirely in New Guinea except for some languages which probably belong to one or two non-Austronesian families and are found in small pockets on islands to the east as far as the Santa Cruz group. To complete this picture of linguistic diversity in Melanesia, note should be made of the Polynesian languages spoken on a number of the very small outlying islands in the eastern portion of Melanesia.

At present, the linguistic evidence is probably a better guide to the multiplicity of origins and deep antiquity of the people who have settled in Melanesia and contributed to its existing populations and their cultures than are the known physical and cultural differences. Physically these peoples may now be placed in a Melanesian Geographic Race. But this refers only to the fact these populations have been in proximity in this general geographic area for a length of time sufficient for them to have exchanged genetic materials and adapted to the uniformities of its environments. As a result they have become more like each other, no matter what language they speak, than they are like any groups outside the area. The uniformity of their physical appearance is not, therefore, as was once assumed, a reliable guide to the uniformity of their origin or an indication that the initial populations everywhere in Melanesia were necessarily all of this type. In fact, as the situation becomes increasingly better studied, particularly from the view point of modern genetics, a much wider range of small but significant differences becomes apparent, particularly in eastern Melanesia. For instance, after environmental, social and other such



selective factors are controlled for, it is still necessary to invoke at least three separate ancestral populations to account for the resident groups of the Bougainville, and only one of these need have been of the type often labelled as a small Oceanic Negroid. On the islands even farther east it has long been known that the populations exhibit greater variation. This has borne out in recent studies, for example, by the wide variations found in some blood-group systems among the local populations of Fiji.

In similar fashion it has long been evident that, of the societies of Oceania, those of Melanesia display far greater range and variation in their cultural designs for living than anything encountered in either Micronesia or Polynesia. Yet, because of the greater ecological variation presented by Melanesia, it has also been recognized that many of these differences may be explained as specific adaptations to Melanesia's wider range of environmental circumstances, making it quite wrong to use this basis alone to infer diverse historical origins. Still, where the differences, for instance, fall into tight sub-areal clusters that do not coincide with language or environment, as do those based on art styles, religious practices, myths, or techniques of pottery manufacture and decoration, it is evident that an explanation in the form of a common historical origin is probably required. In brief, the cultural variations among the numerous societies of Melanesia suggest not only a wide range of adaptations to the variations of the local environments, but also a long and complex cultural history. All of this implies that the longest and most complex cultural history of Oceania is therefore to be expected in Melanesia, a position now receiving convincing support from recent archaeological investigations. In New Guinea pre-Neolithic cultures are in evidence more than 10,000 years ago, while Neolithic cultures with polished stone tools, pottery and some form of horticulture are on record by the first millennium B.C. for both highland New Guinea and Fiji, and in the former area may extend back several thousand years more. Finally, in Fiji archaeological phases belonging to three successive cultural horizons may be defined and related to similar sequences elsewhere in Melanesia.

Although cultural and geographic areas still form the traditional framework for discussions of Oceanic culture history, it is well to end this introduction with the warning that, as analytical concepts for historical reconstruction, their usefulness is becoming increasingly restricted. As the review above has shown, the three areas form units which are unequal in size, time depth, and cultural diversity. Where one is interested in particular linguistic, cultural, or physical differences, they often present boundaries quite unrelated to the phenomenon under consideration. Even from a geographic point of view, these areal boundaries do not single out any particularly uniform, natural factor which serves to set one area completely off from the rest. Moreover, as might be anticipated, the boundaries tend to blur and shift over time or with changed theoretical view points, so that they are seldom the same for race, language, or cultural even at a given period in time. In fact, as cultural areas, these three

traditional divisions more nearly serve to reflect the results of certain processes of cultural change and a particular way of thinking about Oceanic cultural history, than to function as concepts which continue to provide a sound basis for building theories of its prehistory. In short, they have become broad reference units, retained for convenience within and across which more precise concepts of analysis are developing. For instance, Melanesian, as a term for the Austronesian languages of Melanesia, comparable to Polynesian and Indonesian, has now been abandoned and replaced by a number of subgroups, many of which are equal either to the Polynesian, or the eastern Micronesian subgroup. Similarly, the earliest cultural horizon in eastern Melanesia, which extends from a small island off the coast of New Britain to Tonga in Polynesia, is designated as the Lapita pottery horizon, after a particular style of pottery decoration found in the archaeological assemblages belonging to this cultural unit, but is not put forward as proto-Melanesian culture.

2. SETTLEMENT OF OCEANIA

Man moved out into what is now the island world of the Pacific as many as 600,000 years ago. His movements then, however, were by means of land bridges. When he arrived at the zoogeographical divide known as the Wallace Line, which separated most of Indonesia and Borneo from the true Pacific continental land masses of New Guinea and Australia, he paused, as had the mammals before him, in the face of open expanses of sea. Thus, it was not until the second half of the Upper Pleistocene, some 30,000 to 40,000 years ago, when he had already evolved into a modern form of man with the technological skills necessary to cross short stretches of open water, that he entered Australia, and by inference New Guinea, as it was then physically joined to Australia. At this time his presence is also adequately attested in Borneo, the Philippines and Celebes, as well as Indonesia. His culture, at least as we know it today, consisted of little more than a crude assemblage of fairly simple chopper-chopping tools and a wide range of flakes employed for a variety of purposes.

But, as man moved out into this truly island world, even though the land masses were still of continental proportions, he found there a new flora and fauna which had preceded him by many epochs, the fauna in particular being markedly different from the mammalian forms which he had previously hunted. Natural resources on which man could depend at a hunting and gathering level of existence were more meagre; marsupials of various sorts provided the only significant game. As expansion continued eastward, man encountered an increasingly impoverished world, for the indigenous flora and fauna became increasingly restricted, the land masses smaller, and the distances between islands greater. On present evidence it seems likely that he only reached into the Melanesian parts of Oceania at this stage and it was not until many millennia later that he settled Polynesia or parts of Micronesia. This is entirely understandable, for these two areas are composed of islands which are the smallest

in size, possess the most restricted biotic resources, and are separated by the greatest expanses of open ocean. Colonizing them took some time and on present evidence it did not begin until the first or second millennium B.C. Also, it necessitated certain cultural developments, for the settlement of these two areas required that man bring with him the plants and animals on which he was largely to depend, that he possess a maritime technology including boats capable of distance voyaging, and finally, that his culture be capable of fully exploiting the products of the sea. Especially important was the last, for at times he would have to rely almost completely on resources of the sea to establish himself in some parts of this island world.

The development of cultural complexes with these important characteristics, often labelled Neolithic, probably occurred along the coast of the Asian mainland and extended out into island South-east Asia several millennia before their influences reached the more distant parts of eastern Melanesia, Micronesia, and Polynesia. Moreover, their impact on Oceania, it seems, was not by a single direct migration, but rather by a series of movements in which the cultural information passed through succession of populations on adjacent island groups by means of numerous contacts between numbers of cultures of which we are still but dimly aware. Thus, the degree to which migrations need be involved is only that which is required to move people continually from one island group to the next, and even then not always in a systematic or logical geographic direction. Migration routes, or cultural waves, are much too simple formulations of Oceanic prehistory and have largely gone out of vogue.

While the impetus for these developments has a deep antiquity on the mainland of Asia, by 2500 B.C. peoples with a basic Neolithic culture were already establishing themselves in Formosa and shortly thereafter had reached the Philippines. In fact, the ancestral Neolithic cultures of Oceania may have been established in Formosa, even before these migrants arrived on its western coast. Whatever the actual situation, by this time cultures with paddle and anvil-finished pottery vessels in a variety of shapes, rectangular sectioned as well as stepped and polished stone adzes, rectangular and semi-lunar stone knives, tapa beaters, stone hoes, and tools and ornaments from bone and shell are in evidence in Formosa. Moreover, the people raised pigs, chickens, and dogs, and practised grain agriculture, which probably involved the crops of millet and rice. All these items and others, with the exception of the grain agriculture, are characteristic of the Neolithic cultures of Oceania. On the horticultural side, however, it is the root- and tree-crop complex of South-east Asia, propagated largely by vegetative reproduction, that is typical of Oceanic cultures. The cultigens are those such as taro, yam, bananas, arrowroot, coconuts, breadfruits, and some pandans. Among these South-east-Asian food plants the one real anomaly today is the sweet potato, which is of South American origin. However, prehistorically it was present only later in Polynesian prehistory, probably some time after 600 to 800, and was not introduced into New Guinea and Micronesia until about the sixteenth century as a result

of early European contacts. All this suggests that it was probably somewhere in island South-east Asia that the elements from a cultural complex of northern mainland origin were grafted on to a culture and economy of south Asian derivation. This laid the basis for the settlement of the rest of Oceania by peoples with the general cultural pattern that has prevailed thereafter throughout the region.

3. MELANESIAN PREHISTORY

While Melanesia promises to provide the most complex and longest prehistory of the three areas of Oceania, at present it is one about which we know little archaeologically. It is difficult therefore, to provide a general outline of its pre-history, much less fill in the details for a given period of time. In a sense, moreover, knowledge of the area stems largely from two of its more peripheral regions: the eastern highlands of New Guinea, where history itself does not begin until the 1930s; and the easternmost portion of Melanesia (Fiji, New Caledonia and the New Hebrides), which was probably last to be occupied. Coastal New Guinea, New Britain, New Ireland, and the Solomons are only now being explored by archaeologists, although this area is probably central to any overall reconstruction of both Melanesian and Oceanic prehistory. Still, the prehistoric sequence for the highlands of New Guinea furnishes us with the first sound indications of the probable antiquity of man in Oceania, while the sequences for the easternmost portion of Melanesia provide important clues which allow us for the first time to relate this area archaeologically to the adjacent areas of Polynesia and eastern Micronesia. But important though these results are, they do not permit the setting out of any overall scheme for the area. Therefore, it is necessary to present the data in terms of local sequences.

A three-phase sequence has been defined for the New Guinea highlands, based on excavation projects in rock shelters carried out since 1959, the year when the first archaeological excavation was undertaken in the region. The first phase begins some 10,000 years ago, at a time when a very simple stone industry predominates. The industry consists largely of flake tools, with little or no formal shape other than concave edges, which show signs of use. Most characteristic are pebbles and larger flakes with steep working edges, many of which have been retouched. These stone tools were probably used to fashion implements in wood, among which there could well have been some used as weapons for hunting. The importance of hunting has been inferred from the quantity of bone found as refuse in the associated deposits, the animals being local forms of tree kangaroos, wallabies, opossums, bandicoots, as well as a few rats, reptiles, birds and even an occasional fish. In an early level the jaw from an extinct marsupial Tasmanian wolf, the first such to be reported from New Guinea, was also recovered.

This basic flake-tool component of the stone industry persists, with only a

decline in the amount of retouching on the flakes, up to the time of European contact in the 1930s. The small amount of change in the sequence, by which the later phases are defined is accomplished primarily by additions to the basic assemblage. The new items are ground-stone tools of the axe-adze and waisted axe type, stone mortars, pestles, perforated club heads, and pottery. Axe-adzes with lenticular sections put in an appearance at 8000 B.C. in one site, at 4000 B.C. in another. Waisted axes, at first without the working edge ground, occur at the same or a slightly earlier point in the same sequence where the axe-adzes date to 4000 B.C. Lenticular sectioned axe-adzes are replaced after 3000 B.C. by those with flat sides and at this time the pig, a mammal that must have been imported by man from Asia and therefore probably a domesticated form appears. The inferences drawn have been that the axe-adzes were for forest clearance, that the waisted axes served as hoes, and that these together with the pig probably indicate the existence of horticulture in phase II of the highland's sequence at about 4000 B.C.

Support for such an antiquity is found in an irrigation system from another part of the highlands, not unlike ones known there today, which dates back to 350 B.C. Associated with it were digging sticks and other wooden implements used in horticulture, as well as adzes with flat sides. Thus, while phase II may be associated with horticulture, phase III, characterized by the flat sided axe-adze, and at a later point pottery, almost certainly possessed an economy based on the typical Oceanic cultigens much like that found there on contact. The one change has been the addition of the sweet potato to the economy. This not only supported an expansion of the population but made it possible to obtain good crop returns at higher altitudes than before. However, all evidence suggests that this plant was not introduced into New Guinea until the sixteenth or seventeenth century A.D., or at a period after the main concern of this essay.

In summary, during the seventh to the fourteenth centuries A.D. the peoples of the New Guinea highlands were essentially in phase III of the local archaeological sequence. There is evidence that by then trade throughout New Guinea was well established and that as a result they had access to pottery as well as marine shell ornaments from peoples on the coast. It is also likely that by then some pottery was being made locally in the highlands as it was at the time of contact. All this implies that the peoples of coastal New Guinea did not differ substantially from those in the highlands at this time, except for the predictable differences that are to be anticipated as the result of adjustments to the quite differing coastal environments. An association of stone mortars, pestles and perforated club heads with phase II, or the early part of phase III, is often suggested, although their exact chronological position is not known archaeologically. They are usually cited as a single complex, however, because all have the same distribution within coastal and highland New Guinea as well as on adjacent islands of eastern Melanesia, and possess certain stylistic affinities in the decorations found on them.

Of the local sequences at the eastern end of Melanesia, that of Fiji is the best known and most securely dated. No materials from contexts before about 1200 B.C. have been recovered and no assemblages are yet known which suggest the occurrence of earlier stone industries similar to those of New Guinea. Rather, local sequences begin with cultures that are in possession of pottery, ground stone adzes, and a variety of tools and ornaments in bone and shell, including at least a few shell implements known to have been used in the preparation of Oceanic root crops. These facts make it possible to draw the inference that the initial settlement of this area was by peoples with an early Oceanic form of Neolithic culture that derives from still unknown cultures much farther to the west.

The Fijian sequence may be divided into three cultural traditions, two of which may be related to materials from other island groups to form broad cultural horizons. Each tradition is best characterized by the type of pottery associated with it. Thus, the earliest tradition is characterized by pottery of the Lapita style in which decoration produced by dentate stamps is executed in the form of complex *pointillé* designs, though it is well to remember that plain pottery is a main component in this complex and that other motifs including those of very fine line incision also occur. The ground adzes of this horizon have plano-convex, rectangular, and oval cross sections and exhibit excellent parallels with the adzes from the early assemblages of Polynesia. Heavy, elongated shell beads and shell arm rings form a part of a well-developed shell industry. The Lapita horizon, as noted above, was widespread in eastern Melanesia and even extended as far as Tonga in Polynesia. It is dated between the last half of the second millennium B.C. and the middle of the first millennium B.C. in Fiji; elsewhere dates in the first millennium B.C. apply. This cultural tradition is replaced in Fiji by another in which the pottery, made principally by the paddle and anvil method, had the surface of the wooden paddle carved so as to leave designs impressed on the beaten surface of the pot. Adzes of lenticular cross sections, often with flattened sides and narrow polls, are usually associated with this tradition as are shell rings and pottery discs. Also, an economy which included the collection of shellfish is well attested by the wide range of shells in the midden materials, while the pig, turtle, and chicken are also well represented in the refuse. The dog, however, only appears in a few levels, all of them late. Dates for sites with impressed pottery span a period that begins in the first millennium B.C., thus overlapping with the Lapita horizon, and extends to the twelfth century A.D. At present, knowledge of sites belonging to this horizon is restricted almost entirely to Fiji, and a few sites in New Caledonia so it forms no broad horizon in Melanesia. In New Caledonia, as in Fiji, the sites with impressed pottery fall between those of the Lapita horizon and those of the next horizon characterized by incised pottery.

The Incised cultural horizon, like the Lapita, is widespread in eastern Melanesia and is probably separable into several components. The initial

stages of the tradition in Fiji are difficult to characterize, however, in terms of distinctive decorative motifs on the pottery. Rather they are marked only by the use of incision as the principal decorative technique. But a distinctive set of motifs appears in the eighteenth century A.D., just before regular contact with the Europeans, when a comb incised decoration of multiple and often wavy lines occurs on pots in association with flower-pot-like rims. Appliqué decoration in relief on the surface of the vessels and calcite as temper in the clay are other characteristics of the pottery of this tradition. Shell arm bracelets, shell pot scribes, fishhooks of a style known from the Solomon Islands, and adzes of elliptical and rounded-rectangular cross sections in stone and a few in *tridacna* shell are also known from sites of this tradition. A heavy exploitation of shellfish is again well attested, while pig, chicken, turtle and flying-fox bones are found in the midden deposits.

Although this tradition is dated between the twelfth and nineteenth centuries A.D. in Fiji, the cultural complexes to which it is related in New Caledonia, the New Hebrides and the Solomons form a horizon in which the sites there are of the same or earlier dates. Others belong to the European contact period. This suggests that this cultural tradition was first established to the west and slowly made its way east, stopping finally in Fiji. That it may have taken the form of several movements is suggested by the evidence from New Caledonia. The incised pottery from sites at the southern end of New Caledonia is most like the pottery in sites at the earlier end of the Incised tradition in Fiji, while pottery materials from sites at the northern end of New Caledonia have their closest parallels with pottery from sites in the New Hebrides and Solomon Islands and in the late comb-incised materials of the Fijian tradition. Available dates indicate that Incised tradition of New Caledonia is only a little earlier than that of Fiji, while in the New Hebrides a time depth from the fourth to sixth centuries B.C. is in evidence, with local developments coming later.

Unlike the earlier pottery complexes, that of the Incised horizon has some fairly obvious parallels in areas outside Melanesia. Attention was long ago called to its affinities with the Iron Age or geometric pottery complexes of the Philippines dating to the first few centuries B.C. and thereafter. Its ultimate roots are to be found in the earlier geometric pottery complexes of Formosa and northern China where it is associated with various metal age civilizations.

By 600, then, the eastern portion of Melanesia had been settled for nearly 1,800 years and the initial Lapita cultural horizon had been replaced everywhere but in Tonga by new cultural traditions which began to appear at the end of the first millennium B.C. One of these, the Fijian and New Caledonia Impressed tradition of limited extent and unknown antecedents had, before the twelfth century A.D., given way to the Incised tradition. This later and more widely spread cultural horizon of eastern Melanesia, whose origin is ultimately in Asia, appears earliest in the New Hebrides and then spreads, persisting in most places up to the time of regular European contact. Although there is evidence of cultural change for both of these periods, the populations

seem to have maintained the same basic Oceanic economy and continued to speak languages related to Austronesian. However, these cultural contacts which carried as far as Fiji may have introduced new genetic materials as well, making the physical differences between Melanesians and Polynesians, like the cultural ones, more marked than they were originally.

4. MICRONESIAN PREHISTORY

While eastern and western Micronesia would appear to have had markedly different prehistories, only that for western Micronesia is known as a result of archaeological investigation.

In eastern Micronesia the cultures at the time of contact were principally those of a kind adapted to living on coral atolls, and as a result they display ethnographically a wide range of *tridacna* shell adzes, simple fishhooks in marine and turtle shell, fish lures of pearl and other shell, along with numerous other shell and bone tools. On the high islands of Ponape and Kusaie, however, clusters of large monumental stone structures, often built on artificial islands in the lagoon are in evidence, the most famous of these, Nan Matol in Ponape, is sometimes described as the 'Venice of the Pacific'. They would appear to be of late construction and are probably tomb and house platforms of the ranking members of a highly stratified society. In eastern Micronesia it is possible to speak of an archaeological sequence only for the Polynesians an outlier of Nukuoro. Here the evidence indicates settlement of the island before the fourteenth century A.D. by a people with pearl shell fishhooks, shell adzes and chisels, and other bone and shell tools that are more eastern Micronesian than Polynesian in their cultural affinities despite the Polynesian nature of the population's language and physical type (Pl. 64a.)

Archaeological surveys and excavations, especially on Guam and Saipan in the Marianas group, on Yap, and in Palauan Islands provide an initial outline of the prehistory of this area. Here, in contrast to eastern Micronesia, pottery is an important component of the archaeological assemblages and, as in eastern Melanesia, forms a principal basis for their definition. In the Marianas group the earliest pottery, made by the paddle and anvil method, is known as Marianas Red and may date back as much as 1,500 years B.C. It is followed by a period of Marianas plain, in which cord marking and fine-lined incision appears on occasional vessels. This pottery is found in association with the famous *latte* sites, parallel rows of large stone supports for houses. Each support consists of a base stone which is an upright coral slab, and a semi-spherical or disc-like slab balanced on top of the base stone in the horizontal position to form a flat surface on which the wooden members of the house floor rested. Shell adzes, and fishhooks along with cremations and extended burials are known from this period. Particularly interesting are a handful of lime-incised sherds, probably of a trade ware from the Philippine Islands. The phase is dated as early as the ninth century A.D. and persists until

European contact completely disrupted the culture after the sixteenth century A.D.

On Yap excavations revealed pottery and shell adzes which have their closest connections with the Marianas; its unlaminated type of pottery is identical with Marianas plain. Shell tools consisting of adzes, knives, scrapers, peelers, as well as bracelets, rings, and beads, were recovered along with limestone taro pounders and shell trumpets. Shellfish and fish were extensively exploited, while turtle and chicken were also eaten. Again, dates from the eighth century A.D. and later are available.

In the Palau islands most of the attention has focused on a survey of sites in conjunction with the collection of pottery from each. Thus, the local sequence is not as well established as it might have been through excavation. At present it is thought that the thin fine wares with simple rims and check or punched stamped designs are the earliest and are replaced by thicker wares with coarser paste and various specialized and more complex rims forms. The pottery is often associated with large and small terrace construction which have been interpreted as agricultural in function. The small terraces have been assumed to have come first and to reflect an introduction from the Philippines. Other indications of contact with the Philippines are seen in an unusual type of sand-tempered pottery, and the large stone discs with central holes which served as 'Palauan money'. Large megalithic type monuments, probably religious in function, are also known. No radiocarbon dating has been carried out in connection with this work and dates are ascribed on a traditional basis to the last 2,500 years. It is likely, however, that most of the above materials reflect the cultural situation from the beginning of the first millennium A.D. to the present and thus fall largely within the period of our concern.

The Oceanic type of economy, affected only by local variations in environment, seems to have prevailed throughout Micronesia. The dog and the pig, however, seem to be very late, perhaps after European contact, except for Nukuoro, where the dog is found in the earliest levels. Only the chicken is, on the present evidence, certainly prehistoric. The one exception to this general picture was the rice cultivated by the Chamorro of the Marianas prior to the first European contact. This is the only instance of prehistoric rice cultivation in Oceania and the crop is thought to have been introduced from island South-east Asia.

5. POLYNESIAN PREHISTORY

The settlement of Polynesia began about the middle of the second millennium B.C., so that by A.D. 600 the two principal island groups of western Polynesia, Tonga and Samoa, had long been occupied. By A.D. 1000 some of the other islands in this area, Uvea, Futuna, and Niue, were probably occupied also, though as yet we know little about them archaeologically. On the other hand, by 600 settlement was just beginning in eastern Polynesia and only in the

Marquesas can it be demonstrated with any certainty that a resident population was already well established. Yet, by the fourteenth century all of the major island groups in Polynesia furnish adequate evidence of occupation. Thus, while the initial settlement of Polynesia preceded the period under review, the major expansion of the Polynesians over their entire area falls almost completely within the main period of this review.

Theories of Polynesian origins have been numerous. Three of the most popular in recent years favour derivation from Indonesia via a Micronesian route, derivation from the same source but following a Melanesian route, and derivation directly from South America with subsequent entry of Polynesians from Indonesia via the north-west Pacific coast and Hawaii. The first theory has always faced problems because of cultural losses of distinctively Polynesian attributes which would have occurred in the coral atolls of Micronesia, while the second theory has always placed unrealistic limitations on the amount of contact and exchange that would have occurred with populations already resident in Melanesia. The third theory, of course, required that the settlement of Polynesia proceed from east to west, against overwhelming evidence to the contrary. For each theory, some fairly serious objections can also be levelled in the light of the accumulating archaeological evidence. For instance, the first two theories called for direct and fairly late migrations through the intervening areas of either Micronesia or Melanesia by a population that was supposedly already Polynesian in race, language and culture. Yet, traces of any such movements are difficult to find in the prehistory of the areas, and a considerable body of linguistic and archaeological data has grown up that is opposed to these formulations. The third theory has the advantage of postulating two direct migrations, both following ocean currents and avoiding contact with intervening areas. But, in the interim, a substantial body of evidence has accumulated to affirm that, rather than entry of the Polynesians through Hawaii, and from thence south and west to the rest of the area, the situation was just the opposite, that is, Hawaii was among the last of the island groups in eastern Polynesia to be settled, probably from the Marquesas with later contact from Tahiti. Moreover, most of those items cited as evidence for contact with South America appear between 800 and 1200 or midway in the Easter Island sequence, and well after the current dates for the initial settlement of the Polynesian area, itself. A final difficulty common to all these theories is the surprising lack of evidence, thus far, for an archaeological culture of the right date in the Indonesian area that might be cited as directly ancestral to that of Polynesia.

One of the difficulties with the theories of origins, then, has been the attempt to bring into the area by some particular route the founding groups as distinctive Polynesian migrations, rather than to see their development as the result of differentiation occurring within Polynesia itself. Yet, to take this latter position requires only sufficient time in relative isolation for distinctive Polynesian racial, linguistic and cultural patterns to develop in western

Polynesia based on ancestral forms found in the early cultures of eastern Melanesia and in particular those of the neighbouring islands of Fiji. It is this theory which has in recent years received increasing linguistic and archaeological support.

The language groupings most closely related to the Polynesian subgroup are those subgroups found in the eastern portions of Melanesia, with the Fijian groups of languages being the most nearly related. Similarly, the closest cultural assemblages to the earliest ones known from Polynesia are those described above for the early end of the sequence in the eastern portion of Melanesia. One of them, the Lapita horizon, in fact, extends into Tonga by about 500 B.C. and persists there for centuries after it has been replaced elsewhere in Melanesia. The other, the early ceramic horizon of Samoa, begins in the first century B.C. and is associated with adzes that have direct parallels with those of the Lapita horizon in Tonga and Fiji, along with others that do not and are distinctively Polynesian. The horizon contains a type of plain pottery which, though it has no direct parallels in any particular Melanesian pottery assemblage now known, is generally related to the pottery assemblages of the Impressed tradition by its techniques of manufacture, vessel form, rim type, and decoration.

In Tonga, the Lapita pottery tradition continues with little change in its associated artifact assemblage of adzes, octopus lures, shell paring knives, tattooing chisels, and beads and other ornaments which have ties both to the earlier Lapita horizon to the west and to the later Polynesian assemblages to the east. However, the decorative motifs on the pottery become more simple and less frequent until they eventually disappear, while the rims and vessel forms also become less complex. In Samoa the pottery fades out entirely after the third century A.D., though the adze assemblage and other items of material culture continue. As a result, by the seventh century A.D. Samoa possessed a typical western Polynesian culture lacking in pottery and with emphasis on net rather than line fishing, while Tonga possessed a similar culture, but one in which the pottery reflected the survival of a tradition that had disappeared in other areas.

By the twelfth century A.D. stone and earthen mounds serving as house platforms in Fiji, had appeared in Samoa; in contrast, the mounds of this date in Tonga were principally for burial. Each mound had fortifications with earthen banks and surrounding ditches, those of Tonga being of the ring type, and those in Samoa being of the ridge type. The forms in Samoa and Tonga appear to be related to the fortifications of Fiji where both types are found. These are but some of the many indications that contacts between eastern Melanesia and western Polynesia continued although the later Fijian cultural traditions did not extend into Polynesia as intrusive complexes. Witness, for instance, the many outliers in Melanesia which are the result of populations stemming originally from western Polynesia. Yet, the ethnographic division between Polynesia and Melanesia drawn on the basis of the situation in the

eighteenth and nineteenth centuries seems initially to have arisen about 2,000 years ago, when the Lapita horizon in Melanesia was replaced there by new cultural traditions which did not directly affect developments in western Polynesia. Thus, not only between 600 and 1300, but throughout a long period over the last two millennia, Polynesia has formed the one distinctive culture area in Oceania.

Around A.D. 100, or shortly thereafter, it is assumed that a group of western Polynesians, probably from Samoa, settled in the Marquesas where in the course of the next few centuries they developed the characteristic early eastern Polynesian culture that is found widely spread throughout the area at the beginning of each local sequence. Initially, pottery, adzes, and octopus-lure sinkers, like those of Samoa, are found in the earliest levels of the Marquesan sites along with numerous simple fishhooks, harpoons, and other items that are distinctively Eastern Polynesian. The pottery, however, disappears from the sequence after the first few centuries and is not found elsewhere in eastern Polynesia. The local sequence for the Marquesas has been divided into Settlement, Developmental, Expansion, and Classic periods and is defined by stylistic changes in the adzes, fishhooks and other items. It is with the materials belonging to the Developmental phase, which dates from about 800 to 1200, that the earliest materials from other island groups have their closest parallels. Among these are the materials from the burial ground on a little islet off Maupiti in the Society Island group. These are the earliest materials from that island group and considered important because they provide archaeological evidence that the early cultures of the Cook Islands and New Zealand derive from the Society Islands, the settlement of New Zealand dating from about A.D. 800 or 900. A secondary settlement in New Zealand may derive to have been in Easter Island before 800, in Mangareva after that date, and in Hawaii about the same time as New Zealand was settled. Settlement of the Austral Islands from the Society Islands is probably to be placed at about the same time.

By 1200 the people of the Society Islands had developed new styles of fishhooks and elaborated the basic religious structures into complex stone *marae* constructions. These innovations appear shortly thereafter in Hawaii, suggesting contact from the Society Islands during the thirteenth or fourteenth century. (Pl. 64b.) Similar contacts stemming from the Society Islands to the Southern Cooks and nearer islands of the Austral group may also be suggested.

In New Zealand the early eastern Polynesians encountered a non-tropical climate on an island of continental origin, which preserved a wide range of now extinct and often flightless birds. The latter were known as the *moa* and at first gave rise to the name, Moa-hunter, for the earliest settlers. More recent studies have shown, however, that the *moa* was not their most important economic resource and that they were dependent, instead, on fishing, shell-fishing, various sea mammals and the dog, but not the pig or chicken. It is also known that most of the traditional Oceanic cultigens, except for the taro,

would not grow in New Zealand, and that eventually the sweet potato and fern root became the predominant crops. Thus, largely in isolation, an archaic eastern Polynesian culture was transformed by the thirteenth or fourteenth century into something quite different from and yet ancestral to the Classic Maori culture of the eighteenth century.

Except for environmentally based local developments, like those in New Zealand, and possible contacts with non-related cultures, as in Easter Island, the cultures of eastern Polynesia exhibit a great deal of similarity in their local developments, with each group producing its own particular variations on a common theme. As a result, at contact and probably as early as the fourteenth century, each island group had come to possess its own distinctive brand of eastern Polynesian culture.

CONCLUSION

WHAT should be the aim of the writer of the present conclusion? To list the outstanding features of the civilizations whose developments we have followed over a period of nearly a thousand years on the basis of the thoughts and comparisons suggested by this work? To assess the nature and extent of their respective contributions to the cultural heritage of mankind? To discern the factors which would appear to give promise of future expansion or to explain why their progress has slowed down or even stopped? Such, no doubt, is the immense, almost superhuman, task. In the following lines an attempt will be made to sketch some sort of answer.

Once again, we must leave on one side the picture of the 'other worlds'—the Americas, Africa (apart from the Mediterranean fringe) and Oceania. No matter how remarkable certain facets of their development may have been, no matter how praiseworthy the efforts made in the most adverse conditions may appear, and no matter how the future historical research in them may be, these worlds were still living in isolation, and the main effect of the European impact upon them in the sixteenth and seventeenth centuries was to arrest their development and deprive them of their natural maturity.

Let us, therefore, concentrate on Eurasia and on the great 'fields' of civilization which passed through the period 400 to 1300, or came into being during it: the Chinese, the Indian, the Moslem and the European.

It has been said that the originality of Indian, Islamic and European cultures rested on a common base, whereas that of the Chinese world was basically determined by other criteria and other systems of value—different although equally precious and estimable. It is owing to this important specific character of the Chinese world that it had to be reserved a place comparable to those of the other groups.

In the introductory pages, therefore, we painted a broad picture of the lines of force of Chinese society, which, apart from a few variants, is typical of the Far East. The historical chapters enabled us to see that the interplay of these forces gave rise to a society which was increasingly characterized by features which were destined to last for many centuries more. In spite of the belated activity of a few ports such as Canton and Chuanchow, and of a trading activity which made an appreciable contribution to the Imperial economy, this was, above all a vast agrarian society, the cells of which were joined together by an extensive network of waterways and roads, and which was deprived of easy access to the sea. A thousand years of contacts with the barbarians may have changed hierarchies, caused movements of the population and mixed new blood with old, but Chinese society did not vary in its structure—an immense mass of illiterate peasants, aided by ingenious artisans and governed by a thin layer of aristocrats and senior officials, who in turn were assisted by a few specialist and technicians. Chinese immobilism, of which

Hegel would write much later, might appear to have been established as from the first millennium.

But this is not so, for behind a façade almost identical to that of the Han dynasty, we discover a profound evolution. From an empire the ruler of which did as he wanted we pass to an empire the master of which was bureaucracy. The vast body of *literati* succeeded in imposing a moral order which permeated all the cells of the social body, from families to corporations and from the corporations to the major organs of government. In the words of Jacques Gernet: 'morals and politics are but one and the same'. The morals were always those of Confucius, but in their struggle against Buddhism and Taoism they absorbed the legal prescriptions of the Legists who, after the establishment of neo-Confucianism, did not amount to very much. Order was supposed to be taught and regulated, but it belonged to the Natural Order: a system of spontaneous reactions commanded by the force of example and not by the law. It was sufficient to give the child a good education, develop his natural tendency to do good, and, so to speak, facilitate the emergence of the normal man. Adaptations which were standardized by rites (*li*)—such were the activities which filled human existence. To the family egotism of the Han dynasty, subsequent centuries undoubtedly contributed a wider vision of human solidarity. Relations formerly governed by the rigidity of the rituals thus became those defined by a formality which had become part of national custom: courtesy, kindness and politeness were qualities with which all Chinese should be imbued. From this point of view, society was more cultivated and more homogeneous, though homogeneity could only be relative where nearly a hundred million individuals were concerned.

A considerable sector of human behaviour demonstrated the other side of the picture. Excesses of sociability involved sharp reactions, infatuations, mystical impulses and revolutionary pressures which preachers and rebels were not slow to exploit and from which art and literature benefited by using spontaneity and intuition. To be sure, these explosions were stifled, but the fund of exacerbated enthusiasm still remained available for great causes. The fact that society maintained its equilibrium in this way was due not so much to its specific characteristics, which were just as rich as elsewhere, as to the presence of a standard, an example, a judge always trained at the same school—the scholar-official. It may be said it was he who maintained the immutability of the system, and he has been reproached for doing so.

But while this omnipresent class of *literati* became unmovable, the persons composing it were perfectly movable and frequently liable to instant liquidation. Moreover, since the Han dynasty, the examinations had allowed of the recruitment of numerous plebeians to assume public office alongside the sons and grandsons of officials. No doubt, the sacred principles of the examinations were not always respected, and they were frequently by-passed. It is also true to say that favouritism and recommendation slowed up the essential distribution of staff, but it is as well to remember that all these shortcomings did not

so very much prevent its 'democratization'. Professor Kracke has shown that the lists of officials, carefully classified and supplemented by bibliographies, pleaded in favour of the system of examinations and that of official recommendations which the Sung dynasty had the wisdom to introduce so as to avoid the abuses of private recommendations. The examination lists of 1148 and 1256 give concordant figures. Out of three hundred candidates, half were not related to officials, and 40 per cent of these new men were among those at the head of the lists. In view of the system, this proportion confirms the entry of new blood into the official class. But although the personnel of this class was renewed, there was no change in its spirit. The pride in belonging to a privileged corps and the advantages of so belonging, if we consider the wretchedness of the peasants, compelled a certain discipline and certain duties, particularly as the clan's Buddhist and Taoist enemies could at times have demolished it at the least sign of disintegration or weakness. The threat of possible imperial vagaries made a further contribution to the lasting solidarity of the scholar officials. By and large, the population had no cause for complaint, for the society of those times was already producing accomplished humanists who were good administrators with indulgent natures.

While cultural development may present a flattering picture of the average Chinese of the thirteenth century, it did not succeed, as in Europe, in preparing the way for a scientific awakening. The technicians and artisans gave remarkable inventions to the world, including printing and the compass. Their scientists were among the first to pursue advanced mathematical studies and accurately observe natural and clinical phenomena. Chinese science ought to have reached the Galileo stage by the thirteenth century; but, as J. Needham said, it remained at that of da Vinci. It would appear that the three causes contributing to this stagnation were psychological, intellectual and economic.

The psychological cause is certainly related to the existence of an omnipresent bureaucracy, which saw its future as more closely linked to the maintenance of the equilibrium based on the memories of a golden age than to dreams of progress threatening to lead to the overthrow of what had been acquired. For a good Confucianist, initiatives could be tiresome or even immoral.

The intellectual cause was connected with the actual philosophy of Chinese antiquity. The notion of any impersonal law was forbidden in favour of a personalized natural order. The examination of scholars was identified with that of the magistrates. Man was inquisitive and open-minded; he sought above all classifications enabling him to establish relationships; first causes escaped his notice. Often pragmatical, the scholar, like the official, wanted to influence things. The attitude of the Chinese towards legal problems has shown us their clear preference for traditional, oral rules (*li*) and their mistrust of new, written laws (*fa*). No philosophical group really took any interest in the laws of nature. No God extended an invitation, as in the west, to pierce the secret of the cosmic legislator. The Taoists, who were nature lovers, hated reasoning and logic. The logicians were not interested in theories but in

practice. The Legists and Confucianists swore only by man and society. All agreed that the functioning of the world depended on the harmonious co-operation of its elements and all participants. Convinced of the interpenetration of the cosmic, the social and the human, they found the reflection of the rules in Man. But although the notion of laws was discarded, theories were by no means forbidden. As it has been so well defined by J. Needham, to whom we owe the best of our present knowledge of the sciences in China, Chinese thought adopted the concept of waves and continuity, unlike the West whose systems are based on the concept of atoms and principles of discontinuity. Although the Chinese of antiquity were acquainted with the notion of the 'atomic' instant and the Buddhists could thus understand the Indian notion of atoms of time (*Sanskrit, Ksana*), in subsequent centuries they departed from these notions in order to draw from Yin Yang antiquity the vision of a universe subjected to the undulatory progression of opposing and complementary forces. This notion of slow pulsation, involving the harmonious co-operation of all things and all beings, did not favour the development of science, for the concatenation of causes resulted in entities the rhythms of which remained unfathomable. Chinese naturalist philosophy, conscious of cyclical periodicities, the first manifestations of which were obvious in the seasons and the movements of the sun, conceived a universe full of actions and reactions and various mutual influences exerted at a great distance and operating in rather the same way as waves and vibrations. In another sphere of thought, the cyclical conception very soon resulted in the notion of the circulation of the blood and the beating of the pulse. Although the Chinese were unable to make use of these observations, it must be recognized that they attained fundamental concepts the exceptional value of which can today be highly appreciated.

The economic causes are once again connected with the rôle of the officials. The perpetual requirements of the collectivities always found an echo with the prefect. The urban centres were not free cities as in the west, with their fecund intellectual effervescence. The Chinese merchants reigned everywhere and nowhere. Contacts with the scholars were rendered difficult by the official functions which the merchants often occupied. Nor was it easy for the artisans and merchants to join forces, for the artisans were also officials. The psychological, intellectual and economic climates undoubtedly contributed to depriving China from a possible scientific breakthrough, which might well have been prodigious. Yet the opportunities were not lacking. Contacts with Indian and Arabian science provided a perpetual stimulus. China was held in high esteem, and nobody either in the east or the west contested her supremacy. Her great philosophers of neo-Confucianism were the contemporaries and equals of Al Biruni, Ibn Sina and Omar Khayyám. And it may well have been her own awareness of her value which rendered her myopic, when one considers that Euclidian geometry, transmitted by the Arabs, was known in China in 1275, but was only really discovered in the seventeenth century!

But after all, as humanists, we cannot shed too many tears over the fact that the Chinese chose order in preference to law, for science can be learnt in much less time than it takes to establish a great culture. And even though culture without science is an under-development, we should not forget that, to paraphrase Montaigne, science without culture 'is nothing but the ruin of the soul'.

In his book *The Discovery of India*, Jawaharlal Nehru states that India has not had an important philosopher since Śaṅkara, that no subsequent work of art can hold a candle to that to be found at Ajantā, and that in literature Kālidāsa has not been surpassed by any of his successors. There is a measure of truth in these allegations, but there is also, as would appear to emerge from the balance-sheet of Indian civilization from the fifth to the thirteenth centuries, which we drew up quite impartially, an exaggeration which is quite understandable on the part of an Indian conscious of the genius of his people and anxious about their future, which ought to avoid the errors of the past.

However, the period under consideration here was an extremely fecund one for India. In the field of religious thought, the period from the eighth to the eleventh centuries is perhaps the richest in Indian history: it will suffice to recall, among many others all equally deserving of mention, the names of Dignāga, Śaṅkara and Abhinavagupta. In art, the entire Indian world, including South-east Asia and Java, was adorned with wonderful monuments. Let us again take three examples, selected just as arbitrarily: the Kailasanātha at Ellora, a monolithic sanctuary, the Borobudur, a solid monument, and Angkor-vat, a temple. Literary production was abundant, and the chief criticism which can be levelled at it is that it is excessively affected. The writing of poems in the vernacular constituted an effort, although still an inadequate one, to adapt the cultural heritage to a changing world, but Sanskrit remained the language of science and philosophy. Lastly, in science, progress was constant until right into the twelfth century, particularly in mathematics: Bhaskara was perhaps the greatest of Indian mathematicians.

But India gave generously in all spheres, not only to the part of Asia to which she provided civilization but also to the Arab world, and through it to Europe. Her manufactured products were appreciated for their refinement and luxury; her treasury of stories enriched the literature of the world; in science, positional numeration and the zero were her most obvious contributions to the development of modern mathematics. But Arabian science owed much to Indian algebra, astronomy and chemistry. An Indian treatise on astronomy (*Siddhānta*) was translated into Arabic in 771 under the title *Sindhind*. Ya'kub ibn Tarik's *Composition of the Celestial Spheres* was drawn up on the basis of Indian data.

India's influence in the philosophical field is more difficult to detect because more subtle. A comparison of certain Sufi and Indian conceptions brings to light common ways of thinking, although it gives no grounds for speaking of

influence in either direction. Historical data proper is rare and difficult to interpret: it will be remembered that Al Hallal stayed in Kashmir during Abhinavagupta's life. These two great mystics both lived for several months in the same town. Did they have the opportunity, or even the desire, to meet one another?

And yet it is true that the Indian creative genius did not produce everything one was entitled to expect from it. In many fields, India was to allow herself to be outdistanced. What is the cause of this phenomenon? Undoubtedly, political circumstances had a great deal to do with it, although the excuse of foreign invasion is scarcely valid except from the year 1200 onwards. Some of the guilt must be laid at the door of the linguistic vehicle. It is impossible to believe that Kālidāsa wrote in a language which was really dead. But Sanskrit was a dead language by 1300, incapable of rejuvenating itself or of adapting itself to new requirements, particularly in the scientific field; the modern languages were to produce masterpieces in the only sphere in which they were resorted to—that of religious poetry.

But is not this quite relative fading of Indian genius attributable to a sclerosis of the social structures, and of economic, political and even military concepts? How was it possible that the truly admirable courage of the Rajputs failed to prevent the invaders from occupying the national territory? But the deep-lying causes of the terrible disaster which overtook the people and civilization of India should be sought elsewhere.

One of the tragedies of India was that evolution was considered as progressing backwards. In the traditional Hindu view we are all in a stage of unavoidable decadence. Political anarchy and moral depravity are evils participating in a much vaster process of downfall from the time of the Creation till that of the final disintegration, which will be followed by another Creation. This conception of cyclic time to which rhythm is imparted by gigantic diastoles and systoles arrests the progress which was otherwise favoured by the hereditary exercise of the various techniques within the caste system and by the methods of Indian education. The perfection of Indian techniques is the proof of this slow improvement by generations of artisans of a traditional trade to which those engaged in it belonged from birth. But to a certain extent the respect for traditions was also opposed to a radical change in techniques. Moreover, the Indian intellectual élite, whose very existence was threatened, although it had proved its capacity for inventing ideas and new methods, had its intellectual audacity slowed down by the weight of an excessively rich past. In periods of upheaval, the most normal reaction is to review the situation and draw up encyclopaedias. This is what India did. We therefore find those polygraphs, the most perfect of which is perhaps Hemasandra, which tackled all subjects in a talented manner. We also find those monumental works such as the Nibandhas, in the legal field. And the Indian conception of the Pandit was opposed to a specialization rendered inevitable by the increasing complexity of techniques. An engineer such as Suyya, with such remarkable achievements

to his credit, did not belong to the hereditary intelligentsia of the Brahmans; he was a self-made man, but this could not be accepted from the Indian point of view, so the fact was hidden by a legend to the effect that he was a changeling.

Another cause was the one which Nehru and other Indians have made every effort to denounce in recent times. And it is one which, as from the beginning of the eleventh century, Al Biruni diagnosed in terms which, no doubt, were unjustifiably severe. This great scholar, who devoted a considerable part of his life to the study of India, accused the Indians of a national pride which, while undoubtedly legitimate, was very dangerous. India, fully conscious of the irreplaceable value of her own civilization, neglected to replenish herself by contacts with foreign conceptions and discoveries. She received far less than she gave.

It is a remarkable fact that we have descriptions of India by Chinese, Arab and European travellers, but that no Indian traveller took the trouble to tell his compatriots about the parts of the world he had visited. It would appear that this constitutes a lack of interest for everything which is not Indian. Thus, the Indian genius lacked the yeast of those influences which could have widened its horizon and the scope of its research.

On the one hand stood the Middle Empire, more or less disturbed by interference from its neighbours, which the Great Wall should theoretically have kept at a distance. On the other, India, partially isolated by the Himalayan barrier and spreading her influence over South-east Asia. The Mongol and Arab conquests might have brought far-reaching modifications to this general scheme of things, but they did not replace it by a radically different one. The same cannot be said for the Mediterranean world, burst open under the influence of the Arab conquest and henceforth divided between a Moslem world extending far to the east, a Europe which was forming itself by looking for a centre of gravity further to the north, and a Byzantine Empire which was helping to awaken the Slav world. In each of these, societies, transformed to a greater or less degree, were being formed, for which the first cultural problem was to ensure the diffusion of the stupendous system of values and knowledge handed down by Greco-Roman antiquity.

We shall not dwell for long on the Byzantine Empire. To be sure, it was there that the Greco-Roman tradition was maintained the longest and was considerably enriched in the process. The impression of majestic immobility which the superficial observer may derive from certain sources of information is quite unjustified. Legal documents reveal that, between the fifth and thirteenth centuries, there was a distinct development, that the legal system remained creative and that there were numerous technical innovations of good quality. In the thirteenth century there was even an awakening of scientific curiosity which in more favourable historical circumstances, would not have failed to bear fruit. Byzantine civilizing influence was strongly exercised in the

Slav countries, and its processes of thought can even be detected in the Moslem world, as in western and central Europe.

But military and political developments were too much for Byzantine civilization, in spite of a number of remarkable recoveries. The Arabs deprived them of several of their wealthiest and most fertile provinces. While profiting from the fruits of Byzantine civilization, the Slav countries, helped by the sometimes offensive, but always vigorous, resistance of the Bulgars, were able to free themselves at an early date and affirm their own individuality. The ill-fated Fourth Crusade made a useless sacrifice of the Byzantine Empire's chances of survival. Turkish pressure, continually re-applied under new masters, put an end to an existence which was henceforth too much threatened to be able to do anything but leave a legacy. But this legacy was to be of capital importance in the elaboration of the European renaissance.

Foreshortened as it is when viewed through the centuries separating us from it, the Arab conquest of the seventh and eighth centuries easily assumes the terrifying aspect of a sort of Blitzkrieg adjusted to the speed of the age. No matter how astonishing the defeats suffered by the great powers of that time may appear and no matter how extensive the territory gained by the Crescent as a result of them, one should beware of the conclusions to which such an impression might give rise. First of all, the wave of conquests took a good hundred years to break over the territory. In any case, at the beginning at least, the Arab conquest was prepared by a slow process of infiltration, which the force of arms merely sanctioned. Thus, well before the seventh century, there was a progressive penetration of the Syrian regions by Arab nomads abandoning their peninsula. Lastly, the Arab conquest was not revolutionary, nor did it wish to be in respect to the highly varied cultures which it encountered: Syrian, Egyptian, Iranian, Berber and Spanish.

There is no need to look far to see to what extent local traditions, often of venerable antiquity, retained their force in the Moslem world. Methods of government were hardly changed, societies retained their ancient structures, the techniques remained the same, and of course the roads always followed the same itinerary. From many points of view, even though the implantation of Arab power acted in favour of a certain standardization, the flourishing of culture in the Moslem world of the ninth to eleventh centuries was largely the sum of a series of individual flourishings caused by the favourable conditions which that world offered them. But even these last few words indicate that Islam also provided something new. None of the human groups which came under its sway would have had the future which was to be its destiny without that contribution.

First of all, there was the religion itself. Islam is a formalist religion, as had been said all too often, but it is really too facile to state that the believer finds in it habits rather than religious thought, and that the inner life has little place in it. The disciplined execution of the rites in common with the remainder of the community can only contribute to spiritual uplift. There is a Mohammedan

tradition which shows that Islam demands active thought: 'Actions shall be judged on their intention.' Moreover, the spirit of the Koran inculcated in its adepts a will to sacrifice which manifested itself by different trends at different times. First, the sword was taken to fight against the infidel, to attack him and contain him: then mosques were founded together with convents, almshouses and hospitals; fortunes were left to institutions providing assistance. Good works, of course, do not exclude the spirit of violence; but that is also the case in other societies. Islam never ceased to preach a certain nobility of thought and attitude. Whereas in other religions worship was instituted to render the Divinity favourable to the worshippers, the Moslem faithful confined themselves to adoring Allah, and the idea that their prayers could exercise a direct action upon the divine will never enter their heads. To be sure, all over the Moslem world there remained considerable non-Moslem minorities. But the bond between religion, law and government was so close that even the details of daily life were governed by the Koran: even including the times of day which were named after the ritual prayers said at those times.

There remains the question of language. Rarely in history had so vast a geographical area been covered by a language of common origin. Up till the second half of the eleventh century, Arabic imposed itself as the language for written works of all kinds, as also in literature, from the borders of India to the Iberian peninsula. It was only after 1050 that important works in Persian and Hebrew appeared. And in later centuries—right up to the twentieth—Arabic was to retain an international rôle which Latin to a large extent was to lose.

This linguistic unity first of all provided the opportunity for intellectual exchanges and scientific co-operation, the importance of which cannot be overestimated. It was also the means of expansion of a literature which was remarkable for its profound sense of poetry, and for a certain elegance of prose. These are qualities which it is difficult to appreciate even if one is merely outside the Arab world: like all poetry, this cannot do without the music of words. Moslem art is better appreciated: although its tendency towards abstraction was formerly an obstacle to understanding it, today it is clear that it can bear comparison with products of a similar order.

The rôle of distributor played by the Moslem world is widely recognized. Such distribution is, in a way, effected both in time and space. We do not belittle the rôle of the Arabs when we emphasize the real functions of their civilization at that epoch, which was essentially to make translations. In the scientific field, distribution may, from certain points of view, assume an importance comparable to that of discovery itself. The circle of translators should have a degree of intelligence equal to that of the inventors, in order to be able to understand them fully. Without the Arabs, the transmission of science to Europe would have been seriously compromised, or at least delayed. By the tenth century, the era of translations was over, and certain constructive works appeared. The preceding period had been characterized by the immigration of a great number of scientists from outside Islam, mainly Christians, Nestorians

and Jacobites. Although Jews still counted for little, Sabeans were conspicuous. With the break-up of the Empire, the scene was enlarged: the number of cultural centres increased in accordance with the degree of protection afforded by the dynasts who had set themselves up like jackals round the remains of the caliphate and who claimed to bestow its patronage; this was the time when the civilization proper of Baghdad was dying. The Arabs had gained the freedom of the city where science was concerned; the scientists, who had abundant scientific literature at their disposal, would now be able to work with it. The other result was that the Christians began to lose influence, except perhaps in medicine, where they remained in the limelight, together with the Jews. The Moslems now became the principal actors, but transmission also occurred from one sphere to another, from the Far East and India to Europe; the figures known as Arabic, paper, and many other techniques and inventions followed this route.

As from the tenth century, then, the contribution made by Moslem scientists becomes more specific: accounts of voyages, the laboratory experiments of the alchemists, the development of clinical research in medicine, and the practical observations of the astronomers. The latter, equipped with instruments which they were constantly improving, drew up increasingly accurate astronomical tables. The lists of stars, which are full of Arabic names, demonstrate the skill of Arab scientists as astronomic observers. They also gave us equations of the fourth degree, spherical trigonometry, and the use of the sine and tangent. Nor should we forget that the Caliph Mamun had a degree of the terrestrial meridian measured. It is also worth mentioning the use of experiments in chemical research and the classification of medicinal plants. The doctors did what they could in view of the fact that dissection was forbidden, and the great clinician Razi appears to have been a masterly exception. Arab medicine was above all an eclectic synthesis of previous systems. The great advance was made with Razi and the clinical observations which were to take precedence over bookish theorizing.

We should try to assume an equitable attitude with regard to Moslem civilization, which, in view of the language which was its chief vehicle, we might well call Arab civilization, though we should not forget that the greatest scientists using this language were not of Arab stock. Until fairly recently, public opinion in Europe considered that the contribution of Islam to the progress of world culture had been mediocre, whereas today there is a somewhat exaggerated tendency to attribute everything to it. We would like to avoid rapturous generalizations, which would later be tempered by hard facts. Nevertheless, it cannot be denied that it was the Arabic-speaking scientists who gave a start to modern science.

To be sure, after the twelfth century, the Moslem world invaded by the Turks and cut in half by the Mongol conquest, ceased to bear fruit of the same quality. The thirteenth century indisputably marks the transition of culture to Europe and is the period of the European awakening. But that awakening owed

much to Arab and Moslem culture, as it did to Greek and Roman civilization.

We can draw up our balance-sheet for Europe from two points of view. First, we can consider the evolution of a Christian civilization, which incorporated many elements of the classical heritage, rediscovered and reconsidered, and which attained a state of equilibrium in the twelfth and thirteenth centuries: art, literature and thought constituted a harmonious and already 'classical' ensemble within it. All this culture was devoted chiefly to an understanding of the verities of Christian faith and the expression of religious feeling. With variants, it was a parallel to the Byzantine example.

But, in that Europe of the thirteenth century, there also appeared newer aspects which heralded the future: the formation of European languages, the first technical successes, progress achieved in the observation of natural phenomena, and reflections concerning the mysteries of nature. These were the first elements of a meditation thanks to which Europe would be able to renew her vision of the world, once the synthesis of the thirteenth century had been destroyed. Above and beyond a study of the cultural product of this epoch, therefore, we ought to reconstitute the evolution of the human mind, its aptitudes, and its intellectual mechanisms. A difficult task, and no doubt impossible in certain respects, but an essential one. By following the development of European civilization in its chronological rhythm, and in its geographical extension, we can at least draw certain conclusions. From the fifth to the ninth centuries there was first of all an obvious decadence, a vast abyss, and it is useless to localize exactly the lowest point of it. However, the foundation of numerous monasteries prepared the ground for a future revival, since these, in an untutored world, became reading and writing cells. The revival began to take form at the time of the Carolingian Renaissance, with a return to purer Latin, an increase in the number of schools and copying workshops and attempts to create a Christian form of art, all of which were of great significance. After a further series of invasions, a slow but sustained effort was resumed as from the tenth century. It was chiefly the arts which flourished in the first place. This was not only because of the value of the work produced but also, in the penetrating words of Marc Bloch, because 'it was . . . very often, a sort of refuge for values which did not succeed in emerging elsewhere. The purity of style of which the epic was so incapable is to be found in Romanesque architecture. The clear thinking which the notaries were unable to achieve in their title-deeds presided over the work of the builders of arches'. Meanwhile, intellectual progress was conquering other fields. Certain changes came about. During the first years of the twelfth century, while Abelard was applying dialectics to theology and philosophy, the canonists provided the principles on which a compromise could be negotiated in the War of Investitures: men began to take different points of view into account, to combine them, and draw new conclusions from them. The twelfth century may well appear; from certain points of view, as a return to the language and literature of classical Rome; this new dexterity in reasoning about which all thinking

people became enthusiastic, though not without awkwardness and excess, was of even greater importance, and the encroaching successes of dialectics were quite explicable; anyhow, it was not without significance that these intellectual changes coincided with the beginnings of a social transformation: the towns which were growing up became the chief centres of intellectual life, and the episcopal schools, some of which were to blossom out into universities, took over from the monasteries.

Towards the middle of the thirteenth century, bourgeois mentality began to set the tone of civilization. This was a further change, which appears with striking clarity in the field of literature. But philosophical thought, too, was to be affected, and the spirit of criticism and discussion, which developed mainly in the towns, was to call into question the synthesis of the thirteenth century.

Let us now turn to the problems connected with geographical extension; we find that the Mediterranean countries, which were most marked by Romanization, were the quickest to recover their equilibrium. The heritage of classical thought was first transmitted through Spain and Italy. The Mediterranean remained the area of major exchanges par excellence, and Italy was able to lay the economic foundations of an intellectual preponderance which was affirmed from the thirteenth century onwards. Meanwhile, the part played by England in the conservation of classical culture and in the conservation of Germania (it will suffice to mention the names of Bede, Boniface and Alcuin), followed by the activities of the Normans, and later, the emergence of the Parisian basin and the Lowlands, showed that the countries of the north were also awakening.

But between the west—partitioned, wide open to maritime influences and navigation, and easily cut up into small national units—and the more massive central and eastern Europe, there was a time-lag. The archaism of Germany has been frequently referred to. However, the awakening was so rapid that it attained Kieven Rus, and it is difficult to say what the latter might have subsequently become, if it had not been for the shock of the Mongol invasions.

Finally, we should note the existence of a few centres with a particularly intense economic and intellectual activity; these were highly urbanized areas such as northern Italy (from Florence to Genoa and Venice), the Lowlands, and also, no doubt, Catalonia.

These few remarks will have helped to situate the problem of origins. But how shall we explain the progress, which was still modest at the period with which we are dealing, but which started off a development that Europe was to pursue up till the nineteenth century?

Many historians have placed emphasis on the influences from outside. Henri Pirenne explains a sudden decline by means of the Arab conquest, which he relates to the accession of the Carolingians, which was followed by the revival of the twelfth and thirteenth centuries, which he explains by the renewal of contacts with the eastern Mediterranean. Others have detected in the Arab conquest the origin of the rise of Europe. There is no doubt that, up

to about the thirteenth century, Byzantine and Moslem countries retained an extensive hold over Europe. It is obvious that European techniques, arts and thinking drew extensively on the treasure provided by the civilizations of the Near East, to which China and India had also contributed. But it is possible that, by confining ourselves to these facts, we run the risk of ignoring certain real problems. How had Europe become capable of assimilating the elements in these cultures which best suited her? How had she learnt, even before 1300, to combine them in original syntheses, and sometimes even surpass her fore-runners? This is what needs to be explained. To do so we must turn to the factors proper to Europe herself.

With the tenth century and the end of the Norman and Hun invasions, there also ended for Europe the period of semi-nomadism and migrations of peoples. From then on, Poland, Bohemia and Austria constituted the solidly held bulwarks in the shelter of which, further to the west, a new civilization could be organized. Very gradually, thanks to improvements in the quality of tools, an increase in the number of domesticated plants, and the development of more profitable cycles of cultivation, the rural economy achieved greater balance. The increased output of agricultural work made possible a remarkable increase in population, with the result that deserted regions were populated, while a considerable labour force went to settle in the newly growing towns, and initiatives in all fields were favoured. It is no coincidence, by the way, that the disappearance of slavery which had taken place in the meantime, made human ingenuity turn towards the problem of creating more economical working methods and the use of elementary machinery.

However, we should remember that this development was still limited. For want of a better solution to certain problems connected with agricultural techniques, the growth of the towns was arrested, and the proportion of the population freed for what are known as 'tertiary' activities remained small. We are sometimes too inclined to regard medieval culture as the affair of a few members of the élite, while the rural masses remained ignorant and despised. The limits on agricultural production, which was incapable of continuing to support the increasing population, may also be at the origin of the crises of the fourteenth century.

It was as well that, as from the tenth century, a part at least of Europe was sheltered from invasion. But the mixtures of populations to which the former migrations had given rise had not been without their usefulness. From them Europe acquired that multiplicity of character and that extreme complexity in the population and make-up of nations, which were to be at the origin of her internecine strife and later of her weakness but which, in the meantime, were to favour intellectual emulation and co-operation. The chart of emerging languages illustrates this complexity. And in the fields of art and philosophy there appeared this fecund combination of aptitudes.

In view of the religious context of this civilization, it is just as well to study the question of the part played by Christianity and the Church in the rise of

Europe. A zeal for religious duties led the Carolingian sovereigns to cause that intellectual awakening which was soon to surpass its original objectives. By means of its activities on behalf of peace, of respect for conjugal morality, and of woman's position in society, the clergy, by using the threat of hell fire, had introduced a modicum of moral discipline into a brutal, savage world—'one of the great social events of the epoch'. (Marc Bloch.) With its hierarchy, its unity and its certitudes, the Church had also provided an initial basis for intellectual organization and discipline, which, incidentally, had not been unaccompanied by intolerance and a savage suppression of heresy. The intensity with which religious problems were posed caused the clergy to develop a literature in the various vernaculars and provide a rudimentary culture for the masses, which at the same time quenched the thirst for knowledge and explanations of more gifted individuals. The Christian attitude towards suffering was at the origin of social trends, which were still ill defined, but without which the subsequent awakening of ideas of social progress would no doubt have been inconceivable.

Lastly, the appeal addressed to all Christians to imitate Christ and become one of His apostles and spread the good tidings everywhere was a source of that universality which made such an outstanding contribution to European expansion throughout the world, as from the thirteenth century. With St Francis of Assisi, the new characteristics of European Christianity became strongly marked—that strengthening of the Christian message and the transition from the Crusade to the Mission. On the threshold of the fourteenth century, the Catalan Ramon Llull, with his feeling of the intellectual superiority henceforth acquired by Christian Europe and his ardent desire to take advantage of it so as to convert the Moslem world, also appears as a revelation. And undoubtedly his naïve conception of intellectual mechanisms suitable for providing reliably and instantaneously solutions to all problems renders the imperfections of such thinking sensible. This first balance was not final, of course; certain subjects were to achieve autonomy and work out their own methods, though not without difficulty. Science and techniques would have to become more closely associated. And in practice, it was usually against a section of the clergy that such progress was to be accomplished, and had already been accomplished.

External influences, the formation of a strong economic basis, the interaction of national geniuses, and the rôle of Christianity. We claim the right not to have to choose between these explanatory factors, convinced as we are that such choice cannot be easy. Convinced too that all, in some way or another, have their source and end in the progress of the human mind. After all, men, served by the natural surroundings in which they live and confronting the problems put to them, have been able to find within themselves the means of solving these problems. 'Man, the measure of History. Its only measure. More, its reason for existence.' (Lucien Febvre.)

BIBLIOGRAPHY

A. JAPAN, CHINA, INDIA AND SOUTH-EAST ASIA

I. GENERAL

1. *Historical Developments*

ETIENNE BALAZS, 'Les Aspects significatifs de la société chinoise', *Asiatische Studien*, VI, 1-4 (Bern).

THÉODORE DE BARY, Wing-tsit Chan, Burton Watson, *Sources of Chinese Tradition* (New York, 1960).

W. G. BEASLEY and E. G. PULLEYBLANK, *Historians of China and Japan* (London, 1961).

DERK BODDE, *China's Gifts to the West* (Washington, 1942).

PRABODH CHANDRA BAGGHI, *India and China. A Thousand Years of Sino-Indian Cultural Contact* (Calcutta, 1944).

CHI-YUN CHANG, 'The Historical Development of the Land of China', *Chinese Culture*, vol. I, 3 (1958).

VADIME ELISSEEFF, 'L'Empire du Milieu, empire lointain, empire sans voisins', *Diogène*, no. 42 (Paris, 1963).

—, 'Introduction à la culture coréenne', *France-Asie*, nouvelle série, vol. XVII, no. 170 (Nov.-Dec. 1961).

JEAN ESCARRA, *La Chine* (Paris, 1954-5).

C. P. FITZGERALD, *China: A Short Cultural History* (London, 1942).

—, *Le Chemin unificateur de la Chine, 600 à 649* (Paris, 1935).

LOUIS FRÉDÉRIC, 'Féodalité et Préféodalité au Japon', *Journal of World History*, XI, 2 (1969).

—, *La Vie quotidienne au Japon à l'époque des Samuraï (1185-1603)* (Paris, 1968).

RENÉ GROUSSET, *Histoire de la Chine* (Edition revised by Vadime Elisseeff; Paris, 1957).

YU-SHAN HAN, *Elements of Chinese Historiography* (Hollywood, 1955).

HAROLD C. HINTON, MAIRUS B. JANSEN, *Major Topics on China and Japan* (Cambridge, Mass., 1957).

PIERRE HUARD, 'Culture vietnamienne et culture occidentale', *France-Asie*, nos. 141-2 (Paris, 1958).

KAZUO INOUE, *A History of Japan (Nihon no rekishi)* (Tokyo Chūokoronsha, V. III, Nara, 1965).

Japan, its Land, People and Culture (Tokyo, 1958).

CHEONG-HAK KIM, 'A Study of the Peoples of Northern Asia', part II, *Journal of Asiatic Studies*, vol. I, no. 2 (1958).

E. A. KRACKE, 'Sung society: Change within Tradition', *Far Eastern Quarterly*, 14 (1955).

The Legacy of China (London, 1964).

LE THANH KHÔI, *Le Viêt-nam, histoire et civilisation* (Paris, 1955).

JAMES T. C. LIU, *Reform in Sung China: Wang An-shih (1021-86) and his New Policies* (Cambridge, Mass., 1959).

R. C. MAJUMDAR, *Kambuja-deça, or An Ancient Hindu Colony in Cambodia* (Madras, 1944).

KATSUMI MORI, *Kentō-shi (Nihon rekishi shinsho)* (*Les Ambassades japonaises à la Chine des T'ang*) (Tokyo, Shibundō, 1955).

JIRO MURATA, *Chūgoku bunka to Heijō-kyō* (*La Culture chinoise et Heijō-kyō*) *Yamato Bunka Kenkyū*, vol. VII, no. 9 (Tenri, 1962).

PAUL PELLIOT, *Histoire ancienne du Tibet* (*Oeuvres posthumes, V*) (Paris, 1961).

EDWIN O. REISCHAUER, *Ennin's Travels in T'ang China* (New York, 1955).

—, *Japan Past and Present* (rev. ed., New York, 1953).

—, JOHN K. FAIRBANK, *East Asia. The Great Tradition* (London, 1958-60).

ROBERT DES ROTOURS, 'Les Insignes en deux parties (fou) sous la dynastie des T'ang (618-907)', *T'oung Pao*, vol. XLI, bks. 1-3 (Leyden, 1952).

R. A. STEIN, *La Civilisation tibétaine* (Paris, 1962).

—, 'Le Lin-yi, sa localisation, sa contribution à la formation du Champâ et ses liens avec la Chine', *Han-hiue, bulletin du Centre d'études sinologiques de Pékin*, vol. II, chaps. 1-3 (Peking, 1947).

D. C. TWITCHETT, 'The Government of T'ang in the Early Eighth Century', *Bulletin of the School of Oriental and African Studies* (London).

Unesco Korean Survey (Seoul, 1960).

WOODBRIDGE BINGHAM, *The Founding of the T'ang Dynasty. The Fall of Sui and Rise of T'ang* (Baltimore, 1941).

E-TU ZENSUN, JOHN DE FRANCIS, *Chinese Social History* (Washington, 1956).

2. Culture Contacts

ETIENNE BALAZS, 'Marco Polo dans la capitale de la Chine', *Oriente poliano* (Rome, I.S.M.E.O., 1957).

JAMES RUSSELL HAMILTON, *Les Ouïghours à l'époque des Cinq Dynasties d'après les documents chinois*, Bibliothèque de l'Institut des hautes études chinoises, vol. X (Paris, 1955).

RŌICHI HAYASHI, *Shiruku-rōdo to shōsōin* (*La Route de la soie et le shōsōin*) (Tokyo, Heibonsha, 1966).

PAUL PELLIOT, *Notes sur Marco Polo*, bk. I (Paris, 1959).

G. B. SANSOM, *A History of Japan to 1334* (Stanford, 1958).

—, *Japan: a Short Cultural History* (rev. ed., New York, 1944).

Sekai bunka-shi taikei (*Grand Recueil historique des civilisations du monde*), V. XX et seq. (Tokyo, Kadogawa shoten, 1960).

GIUSEPPE TUCCI, 'Marco Polo', *East and West*, 5th year, no. 1 (I.S.M.E.O., Rome, 1957).

GEORGES VERNADZKY, *The Mongols and Russia* (New Haven, 1953).

3. India

S. K. AIYANGAR, *Ancient India* (Poona, 1941).
 ALTEKAR, *Râshtrakutas and their Times* (Poona, 1934).
 R. G. BASAK, *History of North-Eastern India* (Calcutta, 1934).
 W. CODRINGTON, *History of Ceylon* (London, 1926).
 G. COEDÈS, *Les Etats hindouisés d'Indochine et d'Indonésie* (Paris, 1948).
 ——, *Inscriptions du Cambodge* (Paris-Hanoï, 1937-66).
 ——, *Les Peuples de la péninsule Indochinoise* (Paris, 1962).
 H. HERAS, *Studies in Pallava History* (Madras, 1933).
 JOUVEAU-DUBREUIL, *Ancient History of the Deccan* (Pondicherry, 1920).
 ——, *Les Pallavas* (Pondicherry, s. d.; English trans., London, 1916).
 LOUIS DE LA VALLÉE POUSSIN, *Dynasties et Histoire de l'Inde depuis Kanishka jusqu'aux invasions musulmanes* (Paris, 1935).
 N. G. MAJUMDAR, *Inscriptions of Bengal* (Rajshahi, 1920).
 ——, *Ancient India* (Banaras, 1952).
 ——, *History of Bengal* (Decca, 1943).
 ——, and A. PULSAKER, *The History and Culture of the Indian People*. Vol. III: *The Classical Age 320-750* (Bombay, 1954). Vol. IV: *The Age of Imperial Kanauj, 750-1000* (Bombay, 1955). Vol. V: *The Struggle for Empire, 1000-1300*.
 G. C. MENDIS, *Early History of Ceylon* (Calcutta, 1948).
 R. K. MOOKERJI, *Harsha* (London, 1926).
 H. NAZIM, *The Life and Times of Sultan Mahmûd of Ghazna* (Cambridge, 1931).
 NILAKANTA SASTRI, *A History of South India* (Madras, 1955).
 ——, *The Côlas* (Madras, 1935).
 ——, *Foreign Notices of South India* (Madras, 1939).
 ——, *The Pândyan Kingdom* (Madras, 1929).
 ISHWARI PRASAD, *L'Inde du VII^e au XVI^e siècle* (Paris, 1930).
 H. C. RAY, *The Dynastic History of Northern India* (Calcutta, 1931).
 H. C. RAYCHAUDHURI, *An Advanced History of India* (2nd ed., 1950).
 R. SEWELL and S. K. AIYANGAR, *Historical Inscriptions of Southern India* (Madras, 1932).
 V. A. SMITH, *Early History of India* (Oxford, 1924).
 C. V. VAIDYA, *History of Medieval Hindu India* (Poona, 1921-6).

II. TECHNICAL DEVELOPMENTS

1. China and Japan

ETIENNE BALAZS, *Les Foires en Chine* (Brussels, 1953).

—, *Le Traité économique du 'Soueichou' (Etudes sur la société et l'économie de la Chine médiévale)*, I (Leyden, 1953).

—, 'Une carte des centres commerciaux de la Chine', *Annales*, no 4, Paris (Oct.-Dec. 1957).

DOMINIQUE GANDAR, 'Le Canal impérial (étude historique et descriptive)', *Variétés sinologiques*, no. 4 (Shanghai, 1903).

JACQUES GERNET, *Les Aspects économiques du bouddhisme dans la société chinoise du V^e au X^e siècle* (Saigon, 1956) Publications de l'Ecole française d'Extrême-Orient, no. 4.

—, 'Economie et action humaine en Chine', *Critique*, 103 (Paris, Dec. 1955).

—, *La Vie quotidienne en Chine à la veille de l'invasion mongole, 1250-76* (Paris, 1959).

T. HIRINO, 'A Study on Sung Copper Coins in the Light of those Discovered in Japan', *Tōhō Gakuhō (Journal of Oriental Studies)*, no. 19 (Kyoto, Nov. 1950).

KAIZABURŌ HINO, 'An Outlook on the Rural Life in the Sung Era', *Bulletin of the Faculty of Literature Kyūshū University*, no. 6; *Studies in History*, no. 2 (Fukuoka, Japan, 1960).

—, *Government Monopoly on Salt in T'ang in the Period before the Enforcement of the Liang Shui Fa*, Memoirs of the Research Department of the Tokyo Bunko, no. 22 (Tokyo, 1963).

YUNG CHI HO, 'The Anti-Mercantile Tradition in China', *China Society* (Singapore, Annual 1954).

EIJIRO HONJO, *The Social and Economic History of Japan* (Kyoto, 1935).

TAKESHI KAGAMIYAMA, 'The Field System of Ancient Japan', *Bulletin of the Faculty of Literature, Kyūshū University*, no. 6; *Studies in History*, no. 2 (Fukuoka, Japan, 1960).

YUKIO KOBAYASHI, *Kofun no hanashi* (Tokyo, 1965).

TIEN-WAI LIN, *A History of the Perfume Trade of the Sung Dynasty* (Hong Kong, 1960).

JUNG-PANG LO, 'The Emergence of China as a Sea Power during the Late Sung and Early Yuan Periods', *Far Eastern Quarterly*, 14 (Ann Arbor, Mich., 1955).

KŌ-ICHI MORI, *Kofun no Hakkutsu (Fouilles de 'kofun')* (Tokyo, 1965).

DENIS TWITCHETT, 'Lands under State Cultivation under the T'ang', *Journal of Economic and Social History of the Orient*, II (Leiden, 1957).

LIEN-SHENG YANG, *Les Aspects économiques des travaux publics dans la Chine impériale* (Paris, 1964).

—, *Money and Credit in China. A Short History* (Cambridge, Mass., 1952).

2. India and South-east Asia

R. K. MOOKERJEE, *Indian Shipping* (London, 1912).

J. POUJADE, *La Route des Indes et ses navires* (Paris, 1946).

III. THE EVOLUTION OF LANGUAGES

1. China and Japan

LOUIS BAZIN, 'Appartenances linguistiques des envahisseurs altaïques de la Chine du Nord au IV^e et au V^e siècles', *Journal of World History*, I, 1 (1953), 129–38.

BERNHARD KARLGREN, 'Tibetan and Chinese', *T'oung Pao* XXVIII, 1–2 (Leiden, 1931).

—, *The Chinese Language. An Essay on its Nature and History* (New York, 1949).

GEORGES MARGOULIÈS, *La Langue et l'écriture chinoises* (Paris, 1943).

2. India and South-east Asia

J. BLOCH, *La Formation de la langue marâthe* (Paris, 1915).

—, *L'Indo-Aryen du Veda aux temps modernes* (Paris, 1934).

—, *Structure grammaticale des langues dravidiennes* (Paris, 1946).

G. A. GRIERSON, *Linguistic Survey of India* (1903–8) 12 vols.

L. RENOUP, *Histoire de la langue sanscrite* (Paris, 1956).

—, *Sanskrit et culture* (Paris, 1950).

IV. TEACHING

1. China and Japan

HOWARD S. GALT, *A History of Chinese Educational Institutions* (London, 1951).

KÔDÔ TASAKA, *An Aspect of Islam Culture Introduced into China*, Memoirs of the Research Department of the Tokyo Bunko, no. 16, (Tokyo, 1957).

KENG-WANG YEN, *Hein-lo liu T'ang hsüeh-sheng yü seng-t'u* (*Recherches sur les étudiants et moines coréens ayant séjourné dans la Chine des T'ang*). Ch'ing-chu Tung Tso-pin hsien-sheng liu-shih-wu sui lun-wen chi, 1960.

2. India and South-east Asia

A. S. ALTEKAR, *Education in Ancient India* (Benares, 1934).

TH. CHTCHERBATSKI, *Buddhist Logic* (New York, 1962).

S. DUTT, *Buddhist Monks and Monasteries of India* (London, 1962).

B. K. MOOKERJEE, *Ancient Indian Education* (2nd ed., London, 1951).

S. C. VIDYABHUSHANA, *History of the Medieval School of Indian Logic* (Calcutta, 1909).

V. CHINA

I. General

JOSEPH CHAINE, René Grousset, 'Littérature religieuse, Bible, Coran', *Religions de l'Inde et de la Chine* (Paris, 1949).

PAUL DEMIÉVILLE, 'La Situation religieuse en Chine au temps de Marco Polo', *Oriente Poliano* (Rome, 1957).

YU-LAN FUNG, *A History of Chinese Philosophy*, vol. II, *The Period of Classical Learning* (Princeton, 1953).

—, *The Spirit of Chinese Philosophy* (London, 1947).

ALFRED FORKE, *The World Conception of the Chinese: Their Astronomical, Cosmological and Physico-Philosophical Speculations* (London, 1925).

N. I. KONRAD, *The Source of Chinese Humanism* (Moscow, 1957).

M. KUSUMOTO, 'The Backgrounds of the Sung Philosophy', *Tōkōgaku*, 2 (Tokyo, Aug. 1951).

HENRI MASPERO, *Mélanges posthumes sur les religions et l'histoire de la Chine* (Paris, 1950), 3 vols.

HAJIME NAKAMURA, *The Ways of Thinking of Eastern Peoples* (Japanese Commission for Unesco, 1960).

CHONG-HONG PARK, 'Main Currents of Korean Thought', *Korea Journal*, vol. II, 3 (March 1962).

Philosophical Studies of Japan (Japanese National Commission for Unesco, Tokyo, 1959), 2 vols.

EDWIN O. REISCHAUER, *Ennin's Diary. The Record of a Pilgrimage to China in Search of the Law* (New York, 1955).

G. RENONDEAU, *Histoire des moines guerriers du Japon* (Paris, 1957).

W. E. SOOTHILL, *Les Trois Religions de la Chine. Confucianisme, bouddhisme, taoïsme* (Paris, 1934).

RYŪSAKU TSUNODA, THÉODORE DE BARY, DONALD KEENE, *Sources of the Japanese Tradition* (New York, 1958).

ARTHUR F. WRIGHT, *The Formation of Sui Ideology*, in Fairbank, *Chinese Thought and Institutions* (Chicago).

Y. C. YANG, *China's Religious Heritage* (New York, 1943).

2. Buddhism

JACQUES BACOT, *Le Bouddha* (Paris, 1947).

PRABODH CHANDRA BAGGHU, *Le Canon bouddhique en Chine. Les traducteurs et les traductions*, Publications de l'Université de Calcutta (vol. I, Paris, 1927; vol. IV, Paris, 1938).

KUEI-SHENG CHANG, 'The Travels of Hsüan Chuang', *Chinese Culture*, vol. I, 3 (Hong-Kong, Jan. 1958).

PAUL DEMIÉVILLE, *Le Concile de Lhasa; une controverse sur le quiétisme entre bouddhistes de l'Inde et de la Chine au VIII^e siècle de l'ère chrétienne* (Paris, 1952).

—, 'La Pénétration du bouddhisme dans la tradition philosophique chinoise', *Cahiers d'histoire mondiale* III, 1 (1956), 19–38.

RENÉ GROUSSET, *Sur les traces du Bouddha* (Paris, 1957).

HIROSATO IWAI, *Some Historical Studies of Buddhism in China and Japan* (Tokyo, 1957).

WALTER LIEBENTHAL, 'Chinese Buddhism during the 4th and 5th Centuries', *Monumenta Nipponica, Sophia University*, vol. XI, 1 (Tokyo, 1955).

MAX LOEHR, *Buddhist Thought and Imagery*. The Abby Aldrich Rockefeller Inaugural Lecture, Harvard University, 24 Feb. 1961.

RICHARD MATHER, 'The Landscape Buddhism of the First Century Poet Hsieh Ling-yün', *The Transactions of the International Conference of Orientalists in Japan*, Toho Gakkai no. 11 (1957).

KENNETH W. MORGAN, *The Path of the Buddha: Buddhism Interpreted by Buddhists* (New York, 1956).

CHEOU-YI PE, 'Esquisses de l'histoire de l'Islam en Chine', *Bulletin de l'Université l'Aurore*, III, t. VIII, 3 (Shanghai, 1947).

ARTHUR WALEY, *Zen Buddhism and its Relation to Art* (London, 1922).

3. Confucianism, Taoism

YIH-CHING CHOW, *La Philosophie morale dans le néo-confucianisme* (Tcheou Touen-yi) (Paris, 1954).

YU-LAN GUNG, 'The Philosophy of Chu Hsi', *Harvard Journal of Asiatic Studies*, vol. VII, 1 (1942).

E. G. PULLEYBLANK, *The Background of the Rebellion of An Lushan* (London, 1955).

GALEN EUGENE SARGENT, *Tchou Hi contre le bouddhisme* (Paris, 1955).

ARTHUR F. WRIGHT, *Confucian Personalities* (Stanford, Calif., 1962).

4. Legal Thought

T. F. CHENG, 'Fragments of Chinese Law, Ancient and Modern', *Chinese Culture*, vol. I, 3, (Hong Kong, Jan. 1958).

CH'U T'UNG-TSU, *Law and Society in traditional China* (Paris, 1961).

JEAN ESCARRA, *Le Droit chinois* (Peking; Paris, 1936).

JACQUES GERNET, 'La Vente en Chine d'après les contrats de Touen-Houang' (9th–10th centuries), *T'oung Pao*, vol. XLV, bks 4–5 (Leyden, 1957).

A. GONTHIER, *Histoire des institutions japonaises* (Brussels, 1956).

FRÉDÉRIC JOUON DES LONGRAIS, *L'Est et l'Ouest. Institutions du Japon et de l'Occident comparées* (Paris–Tokyo, 1958).

PAUL RATCHNEVSKY, *Un code des Yüan* (Bibliothèque de l'Institut des hautes études chinoises, vol. IV (Paris, 1937).

LIEN-SHEN YANG, 'Studies in Chinese Institutional History', *Harvard-Yenching Institute Studies, XX* (1961).

VI. THE INDIAN WORLD

1. Philosophy and Religion

H. AYYAR, C. V. NARAYAN, *Origin and Early History of Saivism in South India* (Madras, 1936).

ANDRÉ BAREAU ET WALTER SCHUBRING, *Les Religions de l'Inde. Bouddhisme et jaïnisme* (Paris, 1966).

AGEHANANDA BHARATI, *The Tantric Tradition* (London, 1965).

H. D. BHATTACHARYYA, *The Philosophies, Cultural Heritage of India* (Calcutta, 1953).

J. E. CARPENTIER, *Theism in Medieval India* (London, 1921).

S. N. DASGUPTA, *A History of Indian Philosophy* (Cambridge, 1922–49).

MIRCEA ELIADE, *Le Yoga immortalité et liberté* (Paris, 1954).

H. DE GLASENAPP, *La Philosophie indienne*, French trans. (Paris, 1951). (*Die Philosophie der Inder*, Stuttgart, 1949).

JAN GONDA, *Die Religionen Indiens. Der jüngere Hinduismus* (Stuttgart, 1963).

O. LACOMBE, *L'Absolu selon le Vedānta* (2nd ed., Paris, 1966).

JEAN NAUDOU, *Les Bouddhistes kacmītriens au Moyen Age* (Paris, 1968).

S. RADHAKRISHNAN, *Indian Philosophy* (London, 1923–7), 2 vols.

L. RENOUE T. FILLIOZAT, *L'Inde classique* (Paris-Hanoi, 1947–53), 2 vols.

LILIANE SILBURN, *Le Paramārthasāra d'Abhinava gupta* (Paris, 1957).

—, *La Bhakti* (Paris, 1964).

G. TUCCI, *Storia della filosofia indiana* (Bari, 1957).

HEINRICH ZIMMER, *Philosophies de l'Inde*, traduction française (Paris, Editions Payot, 1953).

2. Law and Government

A. S. ALTEKAR, *State and Government in Ancient India* (3rd ed., Delhi, 1958).

E. A. H. BLUNT, *The Caste System of Northern India* (London, 1931).

N. K. DUTT, *Origin and Growth of Caste in India* (London, 1931).

U. N. GHOSHAL, *A History of Indian Political Ideas* (Bombay, 1959).

P. V. KANE, *History of Dharmācāstra* (Poona, 1941–53), 4 vols.

D. RAJ, *L'Esclavage dans l'Inde ancienne d'après les textes pālis et sanskrits* (Paris, 1959).

L. RENOUE, *La Civilisation de l'Inde ancienne* (Paris, 1950).

E. SÉNART, *Les Castes dans l'Inde* (2nd ed., Paris, 1927).

R. S. SHARMA, *Aspects of Political Ideas and Institutions in Ancient India* (Delhi, 1959).

JOHN W. SPELLMAN, *Political Theory of Ancient India* (Oxford, 1904).

VII. SCIENTIFIC THOUGHT

i. *China and Japan*

PIERRE HUARD, MING-WONG, 'Le Taoïsme et la Science', 8th International Congress of the History of Science, *Proceedings* (Florence, 3–9 September, 1956).

WILLIAM HUNG, 'The T'ang Bureau of Historiography before 708', *Harvard Journal of Asiatic Studies*, 23 (Cambridge, Mass., 1960–1).

JOSEPH NEEDHAM, *Science and Civilization in China* (Cambridge, 1954, 1956, 1959), 3 vols.

—, 'The Translation of Old Chinese Scientific and Technical Texts', *Babel* (Unesco), vol. IV (March 1958) (International Federation of Translators).

Nippon kagaku bijutsushi, taikei, vol. I (Tokyo, 1964).

GIOVANNI VACCA, 'Sur l'histoire de la science chinoise', *Archives internationales d'histoire des sciences*, no. 3 (1948).

KIYOSHI YABUCHI, *Chūgoku chūsei kagaku bijutsushi no kenkyū* (Studies in Medieval Chinese Science and Techniques) (Tokyo, 1963).

—, 'The Development of the Sciences in China, from the 4th to the end of the 12th century', *Journal of World History*, 4 (1958).

PHILIPPE WOLFF, FRÉDÉRIC MAURO, *Histoire générale du travail: l'âge de l'artisanat* (V^o-XVIII^o siècle) (Paris, 1960).

Alchemy

CHIAO-LOH FUNG, H. BRUCE COLLIER, 'A Sung Dynasty Alchemical Treatise: "Outline of Alchemical Prescriptions"', *Tu-ku-T'ao*, *Journal of the West China Border Research Society*, IX (1937).

PING-YU HO and JOSEPH NEEDHAM, 'Elixir Poisoning in Medieval China', *Janus, revue internationale de l'histoire des sciences de la médecine, de la pharmacie et de la technique*, 48 (1959).

Astronomy

JOSEPH NEEDHAM, 'The Wilkins Lecture. The Missing Link in Horological History: a Chinese Contribution', *Proceedings of the Royal Society*, A, vol. CCL (Cambridge, 1959).

JOSEPH NEEDHAM, WANG LING, DEREK J. PRICE, 'Chinese Astronomical Clockwork', *Nature*, CLXXVII (31 March 1956).

—, 'Chinese Astronomical Clockwork', 8th International Congress of the History of Science, *Proceedings* (Florence, 3–9 September 1956).

—, *Heavenly Clockwork. The Great Astronomical Clocks of Medieval China. A Missing Link in Horological History*, Antiquarian Horological Society Monographs, I (Cambridge, 1960).

K. YABUCHI, 'Islamic Astronomy in China', *Tōhō Gakuhō (Journal of Oriental Studies)*, XIX (Kyoto, Nov. 1950).

YOEMON YAMAZAKI, 'History of Instrumental Multiplication and Division in China—from the Reckoning-blocks to the Abacus', *Memoirs of the Research Department of the Tōkyō Bunko*, 21 (Tokyo, 1962).

Cartography

ARTHUR BEER, 'An 8th Century Meridian Line: I-Hsing's Chain of Gnomons and the Pre-History of the Metric System', *Vistas in Astronomy*, 4 (London, 1961).

HIROSHI NAKAMURA, 'Old Chinese World Maps Preserved by the Koreans', *Imago Mundi*, IV.

Printing and Paper Making

THOMAS FRANCIS CARTER, *The Invention of Printing in China and its Spread Westward* (New York, Columbia University Press, 1925; repr., Peking, 1941).

DAVID DIRINGER, *Staples Alphabet Exhibition. The Alphabet throughout the Ages and in all Lands* (Staples Press, London, 1953).

K. K. FLUG, *Istorija kitajskoj pecatnoj knigi sunskov epokhi* (Izdatelstvo Akademii Nauk S.S.R., Moscow-Leningrad, 1959).

WON-YONG KIM, 'Early Movable Type in Korea', *Publications of the National Museum of Korea*, Series A, vol. I (Seoul, 1954).

SHU-HWA LI, 'The Spread of the Art of Paper Making and the Discoveries of old Paper', *Collected Papers on History and Art of China* (First Collection) (Taipei, 1960, English Text, Chinese Text).

PAUL PELLIOT, *Les Débuts de l'imprimerie en Chine* (Paris, 1953).

Mathematics and Physical Sciences

JOSEPH NEEDHAM, 'Mathematics and Science in China and the West', *Science and Society*, XX, no. 4 (New York, 1956).

—, et Kenneth Robinson, 'Ondes et Particules dans la pensée scientifique chinoise', *Sciences*, no. 4 (Paris, Nov.-Dec. 1959).

Medicine

M. BARIÉTY, CHARLES COURY, 'Histoire de la tuberculose dans la Chine ancienne', *La Semaine des hôpitaux de Paris*, 25th year, no. 33 (2 May 1949). *Histoire de la médecine en Extrême-Orient* (Paris, 1959) (Catalogue de l'Exposition).

PIERRE HUARD et MING WONG, 'Structure de la médecine chinoise', *Bulletin de la Société des études indochinoises*, new series, V. XXXII, no. 4 (4th term 1957).

—, *La Médecine chinoise au cours des siècles* (Paris, 1959).

—, 'Evolution de la matière médicale chinoise', *Janus*, bk. XLVII (Leyden, 1958).

W. R. MORSE, 'The Practices and Principles of Chinese Medicine', *Journal of the West China Border Research Society*, vol. III (1926-9).

JOSEPH NEEDHAM and GWEI-DJEN LU, 'Hygiène and Preventive Medicine in Ancient China', *Health Education Journal* (Sept. 1959).

Metallurgy in Ancient China

JOSEPH NEEDHAM, 'Second Dickinson Biennal Memorial Lecture: Iron and Steel Production in Ancient and Medieval China', *Transactions of the Newcomen Society*, vol. XXX (1955-6 and 1956-7).

MITSUKUNI YOSHIDA, *Chūgoku kodai no kinzoku bijutsu* (Kyoto, 1959).

Transportation

SHU-HUA LI, 'Première mention de l'application de la boussole à la navigation', *Oriens Extremus* 1st year, no. 1 (Wiesbaden, 1954).

—, 'The South-pointing Carriage and the Mariner's Compass', *Tsing hua, Journal of Chinese Studies*, new series I, I (June 1956).

JOSEPH NEEDHAM and GWEI-DJEN LU, 'Efficient Equine Harness; the Chinese Inventions', *Physis, Rivista di Storia della Scienza*, vol. II, chap. 2 (Florence, 1960).

YUN-WON WANG, *Ho kong ki kiu t'ou chuo* (*Treatise on water control works*) (Shanghai, Chang wou yin chou kouan, 1937).

2. India and South-east Asia

R. BILLARD, 'Recherches sur l'astronomie indienne', *Bulletin de l'Ecole française d'Extrême-Orient* (1963).

B. B. DATTA and A. N. SINGH, *History of Hindu Mathematics* (Lahore, 1935-8), 2 vols.

J. FILLIOZAT, 'La Doctrine classique de la médecine indienne' (Paris, 1949).

—, 'India and Scientific Exchanges in Antiquity', in Guy S. Métraux and François Crouzet, *The Evolution of Science: Readings in the History of Mankind* (New York, 1963).

L. V. GURJAR, *Ancient Indian Mathematics and Vedda* (Poona, 1947).

J. JOLLY, *Indische Medizin* (Strasbourg, 1901).

G. R. KAYE, *Hindu Astronomy* (1924).

—, *Indian Mathematics* (Calcutta, 1915).

R. C. MAJUMDAR, 'Scientific Spirit in Ancient India', in Guy S. Métraux and François Crouzet, *The Evolution of Science: Readings in the History of Mankind* (New York, 1963).

P. C. RAY, *History of Chemistry in Ancient and Medieval India* (Calcutta, 1956).

G. THIBAUT, *Indische Astronomie, Astrologie und Mathematik* (Strasbourg, 1899).

H. ZIMMER, *Hindu Medicine* (Baltimore, 1948).

VIII. LITERARY EXPRESSION

I. China

BASILE ALEXEIEV, *La Littérature chinoise. Six conférences au Collège de France et au musée Guimet* (Nov. 1926) (Paris, 1937).

THÉODORE DE BARY, *Approaches to the Oriental Classics. Asian Literature and Thought in General Education* (New York, 1959).

N. T. FEDORENKO, *Kitaiskaya literatura (Chinese Literature)* (Moscow, 1956).

HERBERT A. GILES, *A History of Chinese Literature* (London, 1901).

PAN-T'ANG JEN, *T'ang hi-long (The T'ang Theatre)* (Peking, Tso-kia tch'ou-pan-tchö, 1958).

ODILE KALTENMARK-GHEQUIER, *La Littérature chinoise*. Coll. 'Que sais-je?' (Paris, P.U.F., 1946).

KIKUYA NAGASAWA, EUGEN FEIFEL, *Geschichte der Chinesischen Literatur und ihrer Gedanklichen Grundlage* (Monumenta Serica, monogr. VII) (Peking, 1945).

TSON-MING TSEN, *Essai historique sur la poésie chinoise* (Lyons, 1922).

Translations

PAUL DEMIÉVILLE, *La Poésie chinoise*, Collection Unesco d'oeuvres représentatives (Paris).

EMILE GASPARDONE, 'Le Théâtre des Yüan en Annam', *Sinologica*, 6 (Basle, 1959).

KAI-YUNG LIU, *Etude sur le roman à l'époque des T'ang* (Shanghai, 1947).

M. MEKADA, 'On the T'ang Fictions', *Tôhôgaku*, 2 (Aug. 1951).

SHIGEYOSHI OBATA, *The Works of Li Po, the Chinese Poet* (New York, Dutton, 1922).

JITSUNOSUKE ONO, *Ri Taihaku kenkyû (Etude sur Li T'ai-po)* (Tokyo, 1959).

JAROSLAV PRUSEK, *Les Contes chinois du Moyen-Age comme source de l'histoire économique et sociale sous les dynasties des Sung et des Yuan. Mélanges publiés par l'Institut des hautes études chinoises*, 2 (Paris, 1960).

ARTHUR WALEY, *The Book of Songs* (London, 1937).

—, *The Life and Times of Po Chiü-i A.D. 772-846* (London, 1949).

—, *One Hundred and Seventy Chinese Poems* (London, 1945).

BURTON WATSON, *Cold Mountains. 100 Poems by the T'ang Poet Han-Shan* (New York, 1962).

2. Japan

HELEN CRAIG MCCULLOUGH, *The Taiheiki; a Chronicle of Medieval Japan* (New York, 1959).

SERGE ELISSEEFF, *Littérature japonaise*, in *Histoire générale des littératures* (Paris, 1961).

BERNARD FRANK, *Histoires qui sont maintenant du passé* (*Konjaku monogatari shū*). Collection Unesco d'oeuvres représentatives (Paris, 1968).

SAKU FUJIMURA, *Nihon bungaku daijiten* (*Grand Dictionnaire de la littérature japonaise*) (Tokyo, 1936-7), 7 vols.

JAN LODEWIJK PIERSON, *The Manyōshū, Translated and Annotated* (Leiden, 1929-49), 7 vols.

EDWIN O. REISCHAUER and JOSEPH K. YAMAGIWA, *Translations from Early Japanese Literature* (Cambridge, Mass., 1951).

ARTHUR WALEY, *The Tale of Genji* (London, New York, 1953).

3. India and South-east Asia

S. N. DASGUPTA and S. K. DE, *A History of Sanskrit Literature: The Classical Period* (Calcutta, 1947).

S. K. DE, *Sanskrit Poetics* (London, 1923-5), 2 vols.

V. R. DIKSHITAR, *Studies in Tamil Literature and History* (Madras, 1936).

H. R. DIWEKAR, *Les Fleurs de rhétorique dans l'Inde* (Paris, 1930).

J. N. FARQUHAR, *An Outline of the Religious Literature of India* (London, 1920).

HEL. VON GLASENAPP, *Die Literaturen Indiens* (Stuttgart, 1963).

R. GNOLI, *The Aesthetic Experience According to Abhinavagupta* (Rome, 1956).

H. H. GOWEN, *History of Indian Literature* (New York, 1931).

J. S. M. HOOPER, *Hymns of the Alvārs*, trans. and notes (1929).

KALHANA, *Rājatarangini*, trans. M. A. Stein (Westminster, 1900).

P. V. KANE, *History of Alam Kāra Literature: Introduction to Sāhityadarpana*, (2nd ed., Bombay, 1923); *History of Sanskrit Poetics: Intr. to Sāhityadarpana* (3rd ed., Bombay, 1951).

A. B. KEITH, *History of Sanskrit Literature* (Oxford, 1928); *Sanskrit Drama* (Oxford, 1924).

STEN KONOW, *Das indische Drama* (Berlin, 1920).

M. KRISHNAMACHARIAR, *History of Classical Sanskrit Literature* (Madras, 1937).

B. C. LAW, *History of Pali Literature* (London, 1933), 2 vols.

S. LÉVI, *Le Théâtre indien* (Paris, 1890).

A. A. MACDINELL, *History of Sanskrit Literature* (London, 1900).

P. MEILE, 'Les Sources non sanskrites: littérature du Sud et littérature du Nord', in *L'Inde classique*, t. I, et 'L'Ancienne Littérature tamoule non religieuse', in *L'Inde classique*, V. II (Paris-Hanoi, 1953).

S. C. NANDIMATH, *A Handbook of Viraçaitivism* (Dharwar, 1942).

NARASIMHACHARYA, *History of Kannada Literature* (Mysore, 1940).

K. C. PANDEY, *Indian Aesthetics* (Banaras, 1950).

M. S. PILLAI, *Purnalingam, Tamil Literature* (Tinnevelly, 1929).

P. T. RAJU, *Telegu Literature* (Bombay, 1944).

L. RENOU, *Littérature sanskrite. Coll. 'Glossaires de l'hindouisme'* (Paris, 1944).

VIDYANATHA, *Le Pratāparudriya*, trans. by P. S. Filliozat (Pondicherry, 1963).

M. WINTERNITZ, *A History of Indian Literature* (Calcutta, 1927), 2 vols.

IX. ARTISTIC EXPRESSION

i. China and Japan

TERUKAZU AKYAMA, *La Peinture japonaise* (Geneva).

F. A. BISCHOFF, 'La Forêt des pinceaux, étude sur l'Académie du Han-lin sous la dynastie des T'ang et traduction du Hanlintche', *Bibliothèque de l'Institut des hautes études chinoises*, vol. XVII (Paris, 1963).

JAMES CAHILL, *La Peinture chinoise* (Geneva).

NAMIO EGAMI, *Nihon bijutsu no tanjō (The Birth of Japanese Art)* (Tokyo, Heibonsha, 1966).

LOUIS FRÉDÉRIC, *Japon, art et civilisation* (Paris, 1969).

BASIL GRAY, *Buddhist Cave Paintings at Tun-huang* (London, 1959).

R. H. VAN GULIK, *Chinese Pictorial Art as Viewed by the Connoisseur* (Oriental Series, Roma XIX), App. XI, Istituto Italiano per il Medio ed Estremo Oriente (1958).

LEANG-FOU KIANG, *Touen-houang: wei-ta li wen-houa pao-tsang (Touen-houang: its Cultural Treasures)* (Chang-hai, Chang-Lai kou-tien wen-hiue tch'ou pan-tchö, 1956).

Korean Arts (Republic of Korea, Ministry of Foreign Affairs, vol. I, 1956; vol. II, 1961; Ministry of Public Information, vol. III, 1963), 3 vols.

TAKESHI KUNO, 'On the Standing-tree Style of Buddhist Sculpture', *Bijutsu Kenkyū (The Journal of Art Studies)*, 217 (Tokyo, 1961).

DAISY LION-GOLDSCHMIDT, *Les Poteries et Porcelaines chinoises* (Paris, P.U.F., 1957).

ROBERT TREAT PAYNE and ALEXANDER SOPER, *The Art and Architecture of Japan* (Harmondsworth, 1955).

MADELEINE PAUL-DAVID, *Arts et Styles de la Chine* (Paris, 1951).

KENNETH ROBINSON, 'New Thoughts on Ancient Chinese Music', *China Society* (Singapore, Annual 1954).

RYŌ KAI (Liang K'ai) (Kyoto, Benrido, 1957).

Sakai bijutsu zenshū (Encyclopaedia of World Art) (Tokyo Kadogawa shoten, bk. III, Japan, no. 3, Nara no. 4; Heian, 1961).

LAURENCE SICKMAN and ALEXANDER SOPER, *The Art and Architecture of China* (Edinburgh, 1956).

OSWALD SIREN, *Chinese painting: Leading masters and principles* (London, 1956-8), 7 vols.

—, *Chinesische Skulpturen der Sammlung Eduard von der Heydt* (Zürich, 1959).

ALEXANDER SOPER, 'Standards of quality in Northern Sung painting', *Archives of the Chinese Art Society of America*, II (New York).

MICHAEL SULLIVAN, *An Introduction to Chinese Art* (Berkeley, Calif., 1961).

PETER C. SWAN, *Chinese painting* (Paris, 1958).

TCHOU-YU TCHOU and CHE-SONEN LI, *T'ang Song houa-kia jen-ming ts'eu tien* (Dictionary of *T'ang* and *Sung* painters) (Peking, Tchong-kouo kou-tien yi-chou tch'ou-pan-chô, 1958).

TI-PEN WOU, *Le Développement de la peinture de paysage en Chine à l'époque Yuan* (Paris, Editions Jouve, 1932).

2. India and South-east Asia

K. P. ACHARYA, *An Encyclopaedia of Hindu Architecture* (Allahabad, 1941).

J. AUBOYER, *Les Arts de l'Asie orientale et de l'Extrême-Orient* (Paris, 1964).

—, *Les Arts de l'Inde* (Paris, 1968).

—, *Arts et Styles de l'Inde* (Paris, 1951).

—, *Introduction à l'étude de l'art de l'Inde* (Rome, 1966).

R. D. BANERJI, *Eastern India School of Medieval Sculpture* (Delhi, 1933).

JEAN BOISSELIER, *Le Cambodge* (Paris, 1966).

—, *La Statuaire du Champâ* (Paris, 1964).

—, *La Statuaire khmère et son évolution* (Saïgon, 1955).

—, *Tendances de l'art khmer* (Paris, 1956).

A. K. COOMARASWAMY, *History of Indian and Indonesian Art* (London, 1927).

G. DE CORAL-RÉMUSAT, *L'Art khmer, les grandes étapes de son évolution* (Paris, 1940).

L. FRÉDÉRIC, *L'Inde, ses temples, ses sculptures* (Paris, 1959).

—, *Le-Sud-Est asiatique, ses temples, ses sculptures* (Paris, 1964).

B. GRAY and D. BARRET, *La Peinture indienne* (Paris, 1963).

B.-P. GROSPLIER, *Indochine, carrefour des arts* (Angkor-Paris, 1956; Paris, 1961).

H. HALLADE, L. HAMBIS, M. PAUL-DAVID, *Toumchoug* (Paris, 1964).

STELLA KRAMRISH, *Hindu Temple* (Calcutta, 1946).

—, *Indian Sculpture* (London-New York, 1933).

HENRI MARCHAL, *L'Architecture comparée dans l'Inde et l'Extrême-Orient* (Paris, 1944).

H. PARMENTIER, *L'Art architectural hindou dans l'Inde et en Extrême-Orient* (Paris, 1948).

B. ROWLAND, *The Art and Architecture of India* (Harmondsworth, 1954).

V. A. SMITH, *History of Fine Art in India and Ceylon* (Oxford, 1911).

PHILIPPE STERN, *L'Art du Champâ et son évolution* (Toulouse, 1942).

—, *L'Art de l'Inde; l'Expansion indienne vers l'Est; la Route maritime; l'Art thibétain*, in *Arts musulmans d'Extrême-Orient*, sous la direction de Louis Réau (Paris, 1939).

—, *Les monuments khmers du style du Bayon et Jayavarman VII* (Paris, 1965).

M. WINTERNITZ, *A History of Indian Literature* (Calcutta, 1927), 2 vols.
 H. ZIMMER, *Mythes et Symboles dans l'art et la civilisation de l'Inde* (Paris, 1951).

B. THE ARABS AND ISLAM

I. GENERAL

N. ABBOTT, *Aisha, The Beloved of Muhammed* (Chicago, 1949).
 —, *The Kurrah-Papyri from Aphrodisio in the Oriental Institute* (Chicago, 1938).
 K. AHRENS, *Muhammad als Religionstifter* (Leipzig, 1935).
 F. ALBERTINI, G. MARCAIS and YVER, *L'Afrique du Nord française dans l'histoire* (Lyons-Paris, 1937).
 C. H. BECKER, *Papyri Schott-Reinhardt* (Heidelberg, 1906).
 R. BELL, *Introduction to the Qur'an* (Edinburgh, 1958).
 M. VAN BERCHEM, *La propriété territoriale et l'impôt foncier sous les premiers califes* (Geneva, 1886).
 P. BERGER, *L'Arabie avant Mahomet* (Paris, 1885).
 R. BLACHÈRE, *Le Coran* (Paris, 1966).
 —, *Le problème de Mahomet* (Paris, 1952).
 L. BREHIER, *Vie et mort de Byzance* (Paris, 1947).
 R. E. BRUENNOW, *Die Charidschiten unter der ersten Omejjaden* (Leiden, 1884).
 F. BUHL, *Das Leben Muhammets* (Berlin, 1930).
 M. E. BURNEY, *Islam Message of the Qur'an* (Hyderabad, 1953).
 J. BUTLER, *The Arab Conquest of Egypt and the Last Thirty Years of the Roman Dominion* (Oxford, 1902).
 L. CAETANI, *Annali dell'Islam* (Milan, 1905–18), 10 vols.
 —, *Chronographia islamica* (Paris, from 1912), 5 fasc.
 P. CASANOVA, *Mohammed et la fin du monde* (Paris, 1911).
 W. CASKEL, *Der Felsendom und die Wallfahrt nach Jerusalem* (Cologne, 1963).
 A. CAUSSIN DE PERCEVAL, *Essai sur l'Histoire des Arabes avant l'Islamisme, pendant l'époque de Mahomet, et jusqu'à la réduction de toutes les tribus sous la loi Musulmane* (Paris, 1847–8), 3 vols.
 M. E. CHEIRA, *La lutte entre Arabes et Byzantins, la conquête et l'organisation des frontières aux VIIe et VIIIe siècles* (Alexandria, 1947).
 J. CHELHOD, *Les structures du sacré chez les Arabes* (Paris, 1964).
 A. CHRISTENSEN, *L'Iran sous les Sassanides* (Copenhagen-Paris, 1936).
 E. DERMENGHEM, *La vie de Mahomet* (Paris, 1950).
 —, *Mahomet et la tradition islamique* (Paris, 1955)—trans. to English by J. M. Watt (New York, 1958).
 N. DESVERGERS, *Arabie* (Paris, 1847).
 DIEHL and G. MARCAIS, *Le monde oriental* (2nd ed. Paris, 1944).
 E. DINET and el-Hadj SLIMAN BEN IBRAHIM, *La vie de Mohammed Prophète d'Allah* (Paris, 1937).

A. DRAZ, *Initiation au Coran* (Cairo, 1950).
 —, *La morale du Coran* (Cairo, 1950).

R. DUSSAUD, *La pénétration des Arabes en Syrie avant l'Islam* (Paris, 1955).
 —, *Les Arabes en Syrie, avant l'Islam* (Paris, 1907).

B. FARES, *L'honneur chez les Arabes* (Paris, 1932).

R. FOURNEL, *Les Berbers. Études sur la conquête d'Afrique par les Arabes* (Paris, 1878–81).

F. GABRIELI, *Il califfato di Hisham* (Alexandria, 1935).
 —, *Gli Arabi* (Florence, 1957).
 —, *Mahomet* (Paris, 1965).

M. GAUDEFROY-DEMOMBYNES, *Le Monde Musulman et Byzantin jusqu'aux Croisades* (Paris, 1931).
 —, *Mahomet* (Paris, 1957).

A. GEIGER, *Was hat Muhammad aus den Judenthume aufgenommen* (Leipzig, 1833 and 1902).

C. V. GHEORGHIU, *Vie de Mahomet* (Paris, 1962).

R. GHIRSHMAN, *L'Iran des origines à l'Islam* (Paris, 1951).
 —, *Parthes et Sassanides* (Paris, 1962).

SIR HAMILTON GIBB, *The Arab Conquest in Central Asia* (London, 1923).

J. DE GOEJE, *Mémoire sur la conquête de la Syrie* (Leiden, 1900).

H. GRIMME, *Mohammed* (Munster, 1892–5), 2 vol.—(2nd ed. Munich, 1904), 2 vols.

A. GROHMANN, *Arabien* (Munich, 1963).
 —, *Einführung und Chrestomathie zur Arabischen Papyruskunde* (Prague, 1955).

R. GROUSSET, *Histoire de l'Arménie des origines à 1071* (Paris, 1947).

I. GUIDI, *L'Arabie antéislamique* (Paris, 1921).

M. GUIDI, *Storia e cultura degli Arabi fino alla morte di Maometto* (Florence, 1951).

A. GUILLAUME, *The Life of Muhammad, a translation Ibn Ishaq's Sirat rasul Allah* (Oxford, 1955).

L. HALPHEN, *Les Barbares* (Paris, 1930).

M. HAMIDULLAH, *Documents sur la Diplomatie Musulmane à l'époque du Prophète et des Khalifes Orthodoxes* (Paris, 1935).
 —, *Le Prophète de l'Islam* (Paris, 1958–9), 2 vols.

M. HAYEK, *Le Christ de l'Islam* (Paris, 1959).

HIRSCHFELD, *New Researches into the Composition and Exegesis of the Qur'an* (London, 1902).

P. K. HITTI, *The History of the Arabs* (London, 1937).

D. G. HOGARTH, *The Penetration of Arabia* (London, 1904).

C. HUART, *Histoire des Arabes* (Paris, 1912–3), 2 vols.

A. JEFFERY, *The Foreign Vocabulary of the Qur'an* (1938).
 —, *The Qur'an as Scripture* (New York, 1952).
 —, *The Koran, Selected Suras* (1958).

J. JOMIER, *Bible et Coran* (1959).

von KARABACEK, *Papyrus Erzherzog Rainer, Führer durch die Ausstellung* (Vienna, 1892).

S. KATSCH, *Judaism and Islam, Biblical and Talmudic Backgrounds of the Qur'an and its commentaries* (New York, 1954).

R. H. KIERNAN, *L'exploration de l'Arabie* (Paris, 1938).

The Koran, many English translations, see *inter alia* A. Arberry (London, 1964); E. Bell (London, 1937–9), 2 vols.; L. Tremlett (London, 1956), etc.

J. LABOURT, *Le christianisme dans l'Empire perse sous la dynastie Sasanide* (Paris, 1904).

H. LAMMENS, *Etudes sur le règne du calife omayyade Mo'awia Ier* (Beirut, 1908).

—, *Etudes sur le siècle des Omayyades* (Beirut, 1930).

—, *Fatima et les filles de Mahomet* (Rome, 1912).

—, *La cité arabe de Taïf à la veille de l'hégire* (Beirut, 1922).

—, *La Mecque à la veille de l'hégire* (Beirut, 1924).

—, *L'Arabie occidentale avant l'Hégire* (Beirut, 1928).

—, *La Syrie* (Beirut, 1921), 2 vols.

—, *Le Berceau de l'Islam* (Rome, 1914).

—, *Le Califat de Yazid Ier* (Beirut, 1910–3).

S. LANE-POOLE, *History of Egypt in the Middle Ages*, 4^e éd. (London, 1925).

—, *The Mohammadan Dynasties* (London, 1894).

J. LAURENT, *L'Arménie entre Byzance et l'Islam depuis la conquête arabe jusqu'en 886* (Paris, 1919).

C. F. LEHMANN-HAUPPT, *Armenien einst und jetzt* (Berlin, 1910–26), 2 vols.

R. LEROUGE, *Vie de Mahomet* (Paris, 1939).

B. LEWIS, *The Arabs in History* (London, 1950).

J. MARCEL, *L'Egypte depuis la conquête des Arabes jusqu'à la domination française* (Paris, 1848).

D. MARGOLIOUTH, *Mohammed and the Rise of Islam*, French trans. Bénazet (Algiers, 1930).

J. MASPERO, *Histoire des patriarches d'Alexandrie* (Paris, 1923).

L. MASSIGNON, *Annuaire du monde musulman*, 5th ed. (Paris, 1954).

D. MASSON, *Le Coran et la révélation judéo-Chrétienne* (Paris, 1958), 2 vols.

de MORGAN, *Histoire du peuple arménien* (Paris, 1919).

B. MORITZ, *Arabien* (Hanover, 1923).

S. MOSCATI, *Storia e civiltà dei Semiti* (Bari, 1949).

Y. MOUBARAC, *Abraham dans le Coran* (Paris, 1958).

W. MUIR, *Annals of the Early Caliphate* (London, 1883).

—, *The Caliphate, its Rise, Decline and Fall* (Edinburgh, 1915).

—, *The Life of Mohammed from Original Sources*, ed. by T. H. Weir (Edinburgh, 1912), 2 vols.

F. NAU, *Les Arabes chrétiens de Mésopotamie et de Syrie du VII^e au VIII^e siècle* (Paris, 1933).

B. NIKITINE, *Les Kurdes* (Paris, 1956).

T. NOELDEKE, *Die Ghassaniden Fürsten an dem Hause Gafna's* (Berlin, 1887).
 ——, *Geschichte der Perser und Araber zur Zeit der Sassaniden* (Leiden, 1879).
 ——, *Zur Geschichte der Omayaden* (1901).

T. NOELDEKE, SCHWALLY and BERGSTRAESSER, *Geschichte des Korans* (Leipzig, 1919–38), 3 vols.

A. NUTTING, *The Arabs. A Narrative History from Mohammed to the Present* (London, 1964).

O'LEARY, *Arabia before Mohammed* (1927).

R. PARET, *Mohammed und der Koran* (Stuttgart, 1957).

J. PERIER, *Vie d'al-Hadjdjadj ibn Yousof* (Paris, 1904).

PERRON, *Femmes arabes avant et depuis l'islamisme* (Paris-Algiers, 1858).

E. L. PETERSEN, *Ali and Mo'awiya in early tradition* (Copenhagen, 1964).

H. PIRENNE, *Mahomet et Charlemagne*, 6th ed. (1957).

J. PIRENNE, *La Grèce et Saba. Une nouvelle base de la chronologie sud-arabe* (Paris, 1955).

—, *Précis de l'histoire d'Egypte*, bk. II (Cairo, 1932).

E. QUATREMÈRE, *Mémoires sur l'Egypte* (Paris, 1811), 2 vols.

E. REITEMEYER, *Beschreibung Aegyptens im Mittelalter* (Leipzig, 1903).
 ——, *Die Städtegründungen der Araber im Islam nach dem arabischen Historikern und Geographen* (Leipzig, 1912).

G. REMONDON, *Papyrus grecs d'Apollonos Anō* (Cairo, 1953).

E. RENAN, *La légende de Mahomet en Occident* (Paris, 1889).

M. RODINSON, *Mahomet* (Paris, 1961).

R. ROBERTS, *The Social Laws of the Koran* (1925).

ROTHSTEIN, *Die Dynastie der Lakhmiden in al-Hira* (Berlin, 1890).

G. RYCKMANS, *Les religions arabes pré-islamiques* (Louvain, 1951).

SABBAGH, *La métaphore dans le Coran* (Paris, 1943).

SACHAU, *Ein Verzeichniss muhammedanischer Dynastien* (Berlin, 1923).

J. SCHACHT, *Der Islam mit ausschluss des Korans* (Tübingen, 1931).

D. SIDERSKY, *Les origines des légendes musulmanes dans le Coran* (1933).

A. SPRENGER, *Das Leben und die Lehre des Mohammed* (Berlin, 1861–5), 3 vols., 2nd ed., 1869.

B. SPULER, *Handbuch der Orientalistik, Geschichte der islamischen Länder, Die Chalifenzzeit* (Leiden, 1952).

TOR ANDRAE, *Mohammed sein Leben und seine Glaube* (Göttingen, 1932)—
 English trans. T. Menzel (London, 1936).

C. C. TORREY, *The Jewish Foundation of Islam* (New York, 1933).

A. A. VASILIEV, *Byzance et les Arabes* (Brussels, 1935–50), 3 vols.
 ——, *Histoire de l'empire byzantin*, trans. Brodin and Bourguina (Paris, 1932), 2 vols.

G. VAN VLOTEM, *Recherches sur la domination arabe, le Chiitisme et les croyances messianiques sous le khalifat des Omayades* (Amsterdam, 1894).

W. M. WATT, *Muhammed at Mecca* (Oxford, 1953).
 ——, *Muhammad at Medina* (Oxford, 1956).

—, *Muhammad: Prophet and Statesman* (London, 1961).

G. WEIL, *Geschichte der Chalifen* (Mannheim, 1846–62), 5 vols.

—, *Mohammed der Prophet, sein Leben und seine Lehre* (Stuttgart, 1843).

J. WELLHAUSEN, *Das Arabische Reich und sein Sturz* (Berlin, 1902). English trans. M. G. Weir (Calcutta, 1927).

—, *Die religios-Politischen Oppositionsparteien im alten Islam* (Berlin, 1901).

—, *Reste arabischen Heidentums*, 2nd ed. (1897).

A. J. WENSINCK, *Mohammed en de Juden te Medina* (1908).

G. WIET, *L'Egypte arabe de la conquête arabe à la conquête ottomane* (Paris, 1937).

G. WINDENGREN, *Muhammad, The Apostle of God, and His Ascension* (Uppsala, 1955).

F. WUESTENFELD, *Die Statthalter von Aegypten zur Zeit der Chalifen* (Göttingen, 1875–6).

—, *Genealogische Tabellen der Arabischen Stämme und Familien* (Göttingen, 1852–3).

E. DE ZAMBAUR, *Manuel de généalogie et de chronologie pour l'histoire de l'Islam* (Hanover, 1927).

II. ARAB EXPANSION

F. ALBERTINI, G. MARÇAIS and YVER, *L'Afrique du Nord française dans l'histoire* (Lyons-Paris, 1937).

ALTAMIRA, *Historia de España y de la civilización española* (Barcelona, 1910–3), 4 vols.

M. AMARI, *Storia dei Musulmani di Sicilia* (Florence, 1854–68), 3 vols., 2nd ed. C. A. Nallino (Catania, 1933–9), 3 vols.

C. VAN ARENDONK, *Les débuts de l'Imamat zaidite au Yémen* (1960).

Sir Thomas ARNOLD, *The Caliphate* (1924).

G. AUDISIO, *La vie de Haroun-al-Raschid* (Paris, 1930), English trans. (New York, 1931).

BECKER, *Beiträge zur Geschichte Aegyptens unter dem Islam* (Strasbourg, 1902–5).

G. H. BOUSQUET, *Les Berbères* (Paris, 1957).

H. BOWEN, *The Life and Times of Ali ibn Isa, the Good Vizier* (Cambridge, 1928).

L. BREHIER, *Vie et mort de Byzance* (Paris, 1947).

C. BROCKELMANN, *Geschichte der islamischen Völker und Staaten* (Munich, 1943).

F. W. BUCKLER, *Harun ar-Rashid and Charles the Great* (Cambridge, Mass., 1931).

L. CAETANI, *Chronografia generale del bacino mediterraneo e dell'oriente musulmano* (Rome, 1923).

C. de CHAVREBIÈRE, *Histoire du Maroc* (Paris, 1931).

F. CODERA, *Estudios críticos de historia árabe española* (Saragossa and Madrid, 1903–17), 3 vols.

N. DESVERGERS, *Arabie* (Paris, 1847).

DIEHL and G. MARÇAIS, *Le Monde oriental*, 2nd ed. (Paris, 1944).

R. DOZY, *Histoire des musulmans d'Espagne*, 2nd ed., revised by E. Lévi-Provençal (Leiden, 1932), 3 vols.

F. GABRIELI, *Gli Arabi* (Florence, 1957).

M. GAUDEFROY-DEMOMBYNES, *Le Monde Musulman et Byzantin jusqu'aux Croisades*, bk. VII de *l'Histoire du Monde* (Paris, 1931).

E. F. GAUTIER, *Les siècles obscurs du Maghreb* (Paris, 1927).

GAYANGOS, *The History of the Muhammadan Dynasties of Spain* (London, 1840), 2 vols.

J. DE GOEJE, *Mémoires sur les Carmathes du Bahrein et les Fatimides* (Leiden, 1886).

L. GOLVIN, *Le Maghreb central à l'époque des Zirides* (Paris, 1957).

GONZALEZ PALENCIA, *El Califato occidental* (Madrid, 1922).

—, *Historia de la España musulmana* (Barcelona, 1929).

—, *Moros y Cristianos en España medieval* (Madrid, 1945).

L. HALPHEN, *Les Barbares* (Paris, 1930).

P. K. HITTI, *The History of the Arabs* (London, 1937).

C. HUART, *Histoire des Arabes* (Paris, 1912–3), 2 vols.

IBN HAMMAD, *Histoire des Rois Obaïdides*, trans. M. Vonderheiden (Algiers-Paris, 1927).

IBN KHALDUN, *Histoire des Berbères*, trans. M. G. de Slane, directed by P. Casanova (Paris, 1925–56), 4 vols.

H. R. IDRIS, *La Berbérie orientale sous les Zirides* (Paris, 1962), 2 vols.

W. IVANOW, *The Rise of the Fatimids* (London, 1942).

JULIEN, *Histoire de l'Afrique du Nord*, 2nd ed., revised by R. Le Tourneau (Paris, 1952).

P. KAHLE, *The Cairo Geniza* (1958).

H. C. KAY, *Yaman, its Early Medieval History* (1892).

J. LACAM, *Les Sarrazins dans le Haut Moyen Age français* (Paris, 1965).

H. LAMMENS, *La Syrie* (Beirut, 1921), 2 vols.

S. LANE-POOLE, *A History of Egypt in the Middle Ages* (London, 1925).

—, *The Muhammadan Dynasties* (London, 1894).

—, *The Moors in Spain* (London, 1920).

J. LAURENT, *L'Arménie entre Byzance et l'Islam depuis la conquête arabe jusqu'en 886* (Paris, 1919).

G. LE STRANGE, *Baghdad during the Abbasid Caliphate* (Oxford, 1900).

—, *The Lands of the Eastern Caliphate* (Cambridge, 1905).

—, *Palestine under the Moslems* (London, 1896).

E. LEVI-PROVENÇAL, *Histoire de l'Espagne musulmane* (Paris and Leiden, 1950–3), 3 vols.

—, *Inscriptions arabes d'Espagne* (Leiden-Paris, 1931), 2 vols.

—, *La civilisation arabe en Espagne, Vue générale* (Cairo, 1938—2nd ed., Paris, 1948).

—, *La péninsule ibérique au moyen-âge* (Leiden, 1938).

—, *L'Espagne musulmane au Xe siècle* (Paris, 1932).

J. MANN, *The Jews in Egypt and Palestine during the Fatimide Caliphate.* (Oxford, 1920–2), 2 vols.

G. MARÇAIS, *Algérie médiévale* (Paris, 1957).

—, *La Berbérie musulmane et l'Orient au moyen âge* (Paris, 1946).

W. MARÇAIS, *Articles et conférences* (Paris, 1961).

J. MARCEL, *L'Egypte depuis la conquête des Arabes jusqu'à la domination française* (Paris, 1848).

J. MARQUART, *Osteuropäische und asiatische Streifzüge* (Leipzig, 1903).

—, *Untersuchungen zur Geschichte von Eran* (Leipzig, 1896–1905), 2 vols.

J. MASPERO and G. WEIT, *Matériaux pour servir à la géographie de l'Egypte* (Cairo, 1919).

M. MERCIER and A. SEGUIN, *Charles Martel et la bataille de Poitiers* (Paris, 1944).

A. MEZ, *Die Renaissance des Islams* (Heidelberg, 1922).

V. MONTEIL, *Les Arabes* (Paris, 1957).

W. MUIR, *The Caliphate, its Rise, Decline and Fall* (Edinburgh, 1915).

A. MUELLER, *Der Islam im Morgen und Abendland* (Berlin, 1885–7).

A. NUTTING, *The Arabs. A Narrative History from Mohammed to the Present* (London, 1964).

O'LEARY, *A Short History of the Fatimid Caliphate* (1923).

—, *Précis de l'histoire d'Egypte*, bk II (Cairo, 1932).

M. REINAUD, *Les invasions des Sarrazins en France* (Paris, 1836).

E. REITEMEYER, *Beschreibung Aegyptens im Mittelalter* (Leipzig, 1903).

—, *Die Städtegründungen der Araber im Islam nach den arabischen Historikern und Geographen* (Leipzig, 1912).

J. RIBERA, *Historia de la conquista de España* (Madrid, 1926).

Sir Denison ROSS, *The Persians* (Oxford, 1931).

SACHAU, *Ein Verzeichniss muhammedanischer Dynastien* (Berlin, 1923).

P. SCHWARZ, *Iran im Mittelalter nach den arabischen Geographen* (Leipzig, 1896–1929).

D. SOURDEL, *Le vizirat abbasside* (Damascus, 1959).

B. SPULER, *Handbuch der Orientalistik, Geschichte der Islamischen Länder; Die Chalifenzeit* (Leiden, 1952).

—, *Iran in Früh-islamischer Zeit* (Wiesbaden, 1952).

—, L. FORRER, *Der vordere Orient in islamischer Zeit* (Bern, 1954).

S. M. STERN, *Fatimid Decrees. Original Documents from the Fatimid Chancery* (London, 1964).

M. STRECK, *Die alte Landschaft Babylonien nach der arabischen Geographen* (Leiden, 1900–1).

SYKES, *A History of Persia* (London, 1915).

F. TAESCHNER, *Geschichte der arabischen Welt* (Heidelberg, Berlin, Magdeburg, 1944—2nd ed., Stuttgart, 1964).

H. TERRASSE, *Histoire du Maroc* (Casablanca, 1948–50), 2 vols.

—, *Islam d'Espagne* (Paris, 1958).

—, *L'Espagne du Moyen-Age* (Paris, 1966).

O. TOUSSOUN, *La géographie de l'Egypte à l'époque arabe* (Cairo, 1926).

A. A. VASSILIEV, *Byzance et les Arabes* (Brussels, 1935–56), 3 vols.

—, *Histoire de l'empire byzantin*, trans. Brodin and Bourguina (Paris, 1932), 2 vols.

P. J. VATIKIOTIS, *Fatimid theory of state* (1957).

J. VERNET, *Los musulmanes españoles* (Barcelona, 1961).

G. van VLOTHOVEN, *De Opkomst der Abbasiden in Chorasan* (Leiden, 1890).

M. VONDERHEYDEN, *La Berbérie orientale sous la dynastie des Benou'l-Arlab* (Paris, 1927).

G. WEIL, *Geschichte des Chalifen* (Mannheim, 1846–62), 5 vols.

WHISHAW, *Arabic Spain, Sidelights on her History and Art* (London, 1912).

G. WIET, *Grandeur de l'Islam* (Paris, 1961).

—, *L'Egypte arabe de la conquête arabe à la conquête ottomane* (Paris, 1937).

F. WUESTENDFELD, *Die Statthalter von Aegypten zur Zeit der Chalifen* (Göttingen, 1875–6).

—, *Geschichte der Fatimiden-Chalifen* (Göttingen, 1881).

Z. M. HASSAN, *Les Tulunides* (Paris, 1933).

E. de ZAMBAUR, *Manuel de généalogie et de chronologie pour l'histoire de l'Islam* (Hanover, 1927).

III. CULTURE CONTACTS

F. ALBERTINI, G. MARÇAIS and YVER, *L'Afrique du Nord française dans l'histoire* (Lyons-Paris, 1937).

ALTAMIRA, *Historia de España y de la civilización española* (Barcelona, 1910–3), 4 vols.

M. AMARI, *Storia dei Musulmani di Sicilia* (Florence, 1854–68), 3 vols.—2nd ed., revised by C. A. Nallino (Catania, 1933–9), 3 vols.

A. S. ATIYA, *Crusade, Commerce and Culture* (London, 1962).

—, *The Crusade, Historiography and Bibliography* (London, 1962).

W. BALDWIN, *A History of the Crusades*, vol. I (Philadelphia, 1955).

W. BARTHOLD, *Histoire des Turcs d'Asie centrale*, French edition by M. Donkis (Paris, 1945).

—, *Turkestan down to the Mongol Invasion* (London, 1928).

J. BOSCH VILA, *Les Almoravides* (Tetouan, 1956).

C. E. BOSWORTH, *The Ghaznavids: Their Empire in Afghanistan and Eastern Iran* (Edinburgh, 1963).

G. H. BOUSQUET, *Les Berbères* (Paris, 1957).

L. BREHIER, *Vie et mort de Byzance* (Paris, 1947).

C. BROCKELMANN, *Geschichte der islamischen Völker und Staaten* (Munich, 1943).

C. CAHEN, *La Syrie du Nord à l'époque des Croisades et la principauté franque d'Antioche* (Paris, 1940).

L. CAHUN, *Introduction à l'histoire de l'Asie, Turcs et Mongols des origines à 1405* (Paris, 1896).

M. CANARD, *Histoire de la dynastie des Hamdanides de Jazira et de Syrie* (Algiers, 1951).

A. CASTRO, *Réalité de l'Espagne* (Paris, 1963).

C. de CHAVREBIÈRE, *Histoire du Maroc* (Paris, 1931).

F. CODERA, *Decadencia y desaparición de los Almoravides en España* (1899).

—, *Estudios críticos de historia árabe española* (Saragossa and Madrid, 1903–17), 3 vols.

COKE, *Baghdad, The City of Peace* (London, 1927).

DEFRÉMERY, *Mémoires d'histoire orientale* (Paris, 1858–62).

N. DESVERGERS, *Arabie* (Paris, 1847).

DIEHL and G. MARÇAIS, *Le Monde oriental de 385 à 1081*, 2nd ed., (Paris, 1944).

R. DOZY, *Histoire des musulmans d'Espagne*, 2nd ed., revised by E. Lévi-Provençal (Leiden, 1932), 3 vols.

W. DUDA, *Die Sellschukengeschichte des Ibn Bibi* (1959).

D. M. DUNLOP, *The History of Jewish Khazars* (Princeton, 1954).

N. ELISSEEFF, *Nur ad-din* (Damascus, 1967).

F. GABRIELI, *Gli Arabi* (Florence, 1957).

GAYANGOS, *The History of the Muhammadan Dynasties of Spain* (London, 1840), 2 vols.

A. GONZALEZ PALENCIA, *Historia de la España musulmana* (Barcelona, 1929).

H. L. GOTTSCHALK, *Al-Malik al-Kamil von Egypten und seine Zeit* (Wiesbaden, 1958).

F. GRENARD, *Gengis-Khan* (Paris, 1935).

R. GROUSSET, *Histoire des Croisades et du royaume franc de Jérusalem* (Paris, 1934–6), 3 vols.

M. G. S. HODGSON, *The Order of Assassins* (The Hague, 1955).

J. F. P. HOPKINS, *Medieval Muslim Government in Barbary, Until the Sixth Century of the Hijra* (London, 1958).

C. HUART, *Histoire des Arabes* (Paris, 1912–3), 2 vols.

A. HUICI MIRANDA, *Historia Política del Imperio almohade* (1956).

JULIEN, *Histoire de l'Afrique du Nord*, 2nd ed., revised by R. le Tourneau.

S. LANE-POOLE, *A History of Egypt in the Middle Ages*, 4th ed., (London, 1925).

—, *Saladin and the Fall of the Kingdom of Jerusalem* (London, 1898).

—, *The Mohammedan Dynasties* (London, 1894).

J. LAURENT, *Byzance et les Seldjoukides dans l'Asie occidentale jusqu'en 1081* (Nancy, 1913).

E. LEVI-PROVENÇAL, *Documents d'histoire almohade* (Paris, 1928).
 —, *Séville musulmane au début du XIIe siècle* (Paris, 1947).
 G. MARÇAIS, *Les Arabes en Berbérie du XIe au XIVe siècle* (Constantine-Paris, 1913).
 J. MARCEL, *L'Egypte depuis la conquête des Arabes jusqu'à la domination française* (Paris, 1848).
 H. E. MAYER, *Geschichte des Kreuzzüge* (1965).
 R. MENENDES PIDAL, *La España del Cid* (1947).
 W. MUIR, *The Caliphate, its Rise, Decline and Fall* (Edinburgh, 1915).
 NAZIM, *The Life and Times of Sultan Mahmud of Ghazna* (Cambridge, 1931).
 A. NUTTING, *The Arabs. A Narrative History from Mohammed to the Present* (London, 1964).
 —, *Précis de l'histoire d'Egypte*, bk II (Cairo, 1932).
 M. RAHMATALLAH, *The Women of Baghdad in the Ninth and Tenth Centuries as Revealed in the History of Baghdad of al-Hatib* (Baghdad, 1962).
 E. REY, *Les colonies franques de Syrie* (Paris, 1883).
 Sir Denison ROSS, *The Persians* (Oxford, 1931).
 S. RUNCIMAN, *A History of the Crusades* (Cambridge, 1951-4), 3 vols.
 SACHAU, *Ein Verzeichniss muhammedanischer Dynastien* (Berlin, 1923).
 G. SCHLUMBERGER, *Campagnes du roi Amaury Ier de Jérusalem en Egypte au XIIe siècle* (Paris, 1906).
 —, *Renaud de Châtillon* (Paris, 1898).
 B. SPULER, *Handbuch der Orientalistik, Geschichte der islamischen Länder, Die Mongolzeit* (Leiden, 1932).
 B. STEVENSON, *The Crusaders in the East* (Cambridge, 1907).
 SYKES, *A History of Persia* (London, 1915).
 H. TERRASSE, *Histoire du Maroc* (Casablanca, 1948-50), 2 vols.
 A. VASSILIEV, *Byzance et les Arabes* (Brussels, 1935-50), 3 vols.
 —, *Histoire de l'empire byzantin*, trans. Brodin and Bourguina (Paris, 1932), 2 vols.
 G. WEIL, *Geschichte der Chalifen* (Mannheim, 1846-62), 5 vols.
 G. WIET, *Grandeur de l'Islam* (Paris, 1961).
 —, *L'Egypte arabe de la conquête arabe à la conquête ottomane* (Paris, 1937).
 E. de ZAMBAUR, *Manuel de généalogie et de chronologie pour l'histoire de l'Islam* (Hanover, 1927).

IV. TECHNIQUES OF THE ARAB WORLD

Sir Thomas ARNOLD and A. GUILLAUME, *The Legacy of Islam* (Oxford, 1931).
 K. A. C. CRESWELL, *A Bibliography of Arms and Armour in Islam* (London, 1956).
 A. M. FAHMY, *Muslim Naval Organization in the Eastern Mediterranean, from the Seventh to the Tenth Century A.D.* (1966).

N. FRIES, *Die Heerwesen der Araber zur Zeit den Omeyyaden* (1921).

R. T. GUNTHER, *The Astrolabes of the World* (Oxford, 1932), 2 vols.

W. HEYD, *Histoire du commerce du Levant*, trans. Furcy Raynaud (Leipzig, 1936), 2 vols.

G. F. HOURANI, *Arab Seafaring on the Indian Ocean* (1951).

S. A. HUZAYIN, *Arabia and the Far East* (Cairo, 1942).

IBN AL-UKHUWA, *Ma'alim al-Qurba fi-ahkam al-Hisba*, ed. with abstract of translation, by E. Levy (London, 1938).

G. JACOB, *Der nordisch-baltische Handel der Araber im Mittelalter* (Leipzig, 1887).

A. KAMMERER, *La Mer Rouge, l'Abyssinie et l'Arabie depuis l'antiquité* (Cairo, 1929–35), 2 vols.

S. Y. LABIB, *Handelsgeschichte Aegypten im Spätmittelalter* (1965).

A. LEWIS, *Naval Power and Trade in the Mediterranean* (1951).

L. MASSIGNON, *L'influence de l'Islam au moyen âge sur la fondation et l'essor des banques juives*, *Bulletin de l'Institut d'Etudes orientales*, vol. I (Damascus, 1931).

L. A. MAYER, *Bibliography of Moslem Numismatics* (London, 1954).

M. MERCIER, *Le feu grégeois* (Paris-Avignon, 1952).

D. MOELLER, *Studien zur mittelalterlichen arabischen Falkenrei-literatur*, (Berlin, 1965).

H. RITTER, J. RUSKA, F. SARRE, R. WINDERLICH, *Orientalische Steinbücher und Persische Fayencetechnik* (Istanbul, 1935).

J. SAUVAGET, *Introduction à l'étude de la céramique musulmane*, *Revue des Etudes islamiques*, 1965, pp. 1–72.

SCHWARZLOSE, *Die Waffen der alten Araber* (1886).

F. VIRÉ, *Le traité de l'art de volerie* (Leiden, 1967).

V. THE EVOLUTION OF LANGUAGE

A. GROHMANN, *From the World of Arabic Papyri* (Cairo, 1952).

—, *Arabic Papyri in the Egyptian Library* (Cairo, 1934–59), 5 vols.

Sir Thomas ARNOLD and A. GROHMANN, *The Islamic Book* (Leipzig, 1929).

M. COHEN and W. MARÇAIS, *Précis de linguistique sémitique* (Paris, 1910).

H. FLEISCH, *Introduction à l'étude des langues sémitiques*, *Eléments de bibliographie* (Paris, 1947).

—, *L'Arabe classique. Esquisse d'une structure linguistique* (Beirut, 1956).

—, *Traité de philologie arabe* (Beirut, 1961).

C. FLUEGEL, *Die Grammatischen Schulen der Araber* (Leipzig, 1862).

J. FUECK, *Arabiya* (Berlin, 1950).

A. N. POLIAK, 'L'arabisation de l'Orient sémitique' (*Revue des Etudes islamiques*, Paris, 1938).

S. REICH, *Etudes sur les villages araméens de l'Anti-Liban* (Damascus, 1938).

E. RENAN, *Histoire générale des langues sémitiques* (Paris, 1868).

D. S. RICE, *The Unique Ibn al-Bawwab Manuscript in the Chester Beatty Library* (Dublin, 1955).

F. SEZGIN, *Geschichte des arabischen Schriftums* (Leiden, 1967).

B. SPULER, *Handbuch der Orientalistik, Semitistik* (Leiden, 1964).

—, *Handbuch der Orientalistik, Iranistik, Linguistik* (Leiden, 1967).

—, *Handbuch der Orientalistik, Alatistik, Turkologie, Linguistik* (Leiden, 1963).

—, *Handbuch der Orientalistik, Altaistik, Mongolistik* (Leiden, 1964).

—, *Handbuch der Orientalistik, Armenisch und Kaukasische Sprachen* (Leiden, 1963).

VI. TEACHING AND EDUCATIONAL INSTITUTIONS

A. J. ARBERRY, *Aspects of Islamic Civilization as Depicted in the Original Texts* (London, 1964).

H. BAUER, *Islamische Ethik* (Halle, 1917–22).

R. BRUNSCHVIG and G. E. von GRUNEBAUM, *Classicisme et déclin culturel dans l'histoire de l'islam* (Paris, 1957).

J. CHELHOD, *Introduction à la sociologie de l'Islam* (Paris, 1958).

B. DODGE, *Muslim Education in Medieval Times* (Washington, 1962).

M. DONALDSON, *Studies in Muslim Ethics* (London, 1953).

Y. ECHE, *Les bibliothèques arabes publiques et semi-publiques en Mésopotamie, en Syrie et en Egypte au moyen âge* (Damascus, 1967).

F. GABRIELI, *Aspetti della civiltà arabo-islamica* (Turin, 1956).

—, *Dal mondo dell'Islam: nuovi saggi di storia e civiltà musulmana* (Milan-Naples, 1954).

—, *Storia e civiltà musulmana* (Naples, 1947).

M. GAUDEFROY-DEMOMBYNES, *Les institutions musulmanes* (Paris, 1946. English trans. J. P. MacGregor (London, 1950).

Sir Hamilton GIBB, *Studies on the Civilization of Islam* (London, 1962).

G. E. von GRUNEBAUM, *Islam. Essays in the Nature and Growth of a Cultural Tradition* (Chicago, 1955).

—, *Medieval Islam. A study in Cultural Orientation* (Chicago, 1947).

—, *Studies in Islamic Cultural History* (Menasha, Wisconsin, 1956).

J. KRAEMER, *Das Problem der islamischen Kulturgeschichte* (Tübingen, 1959).

A. von KREMER, *Kulturgeschichte des Orients unter den Chalifen* (Leipzig, 1875–7), 2 vols.

—, *Geschichte der herrschenden Ideen des Islams* (Leipzig, 1868).

W. MARÇAIS, *L'Islamisme et la vie urbaine, Comptes rendus de l'Académie des Inscriptions et Belles-Lettres* (Paris, 1928).

L. MASSIGNON, *Comment ramener à une base commune l'étude des deux cultures: l'arabe et la gréco-latine, Lettres d'Humanité, bk II* (Paris, 1942).

A. MAZAHERI, *La vie quotidienne des Musulmans au moyen âge* (Paris, 1951).

A. MEZ, *Die Renaissance des Islams* (Heidelberg, 1922).

G. PINTO, *Le biblioteche degli Arabi nell'eta degli Abbassidi* (Florence, 1928).
 A. TALAS, *L'Enseignement chez les Arabes. La Madrasa Nizamiya et son Histoire* (Paris, 1939).
 A. S. TRITTON, *Materials on Muslim Education in the Middle Ages* (London, 1957).

VII. RELIGION, PHILOSOPHY AND LAW

J. M. ABD-EL-JALIL, *Aspects intérieurs de l'Islam* (Paris, 1950).
 A. H. ABDEL-KADER, *The Life, Personality and Writings of al-Junayd* (London, 1962).
 ABU SALIH, *Churches and Monasteries of Egypt*, ed. and trans. Evetts (Oxford, 1895).
 S. M. AFNAN, *Avicenna, His Life and Works* (London, 1958).
 M. ALLARD, *Le problème des attributs divins dans la doctrine d'al-Ash'ari et de ses premiers grands disciples* (Beirut, 1965).
 ALONSO, *Teología de Averroes* (1947).
 G. ANAWATI, *Essai de bibliographie avicennienne* (Cairo, 1950).
 G. ANAWATI and L. GARDET, *Introduction à la théologie musulmane* (Paris, 1949).
 ——, *Mystique musulmane, aspects et tendances, expériences et techniques* (Paris, 1961).
 ANSARI(AL-), *Les étapes des itinéraires vers Dieu*, ed. and trans. S. de Laugier de Beaurecueil (Cairo, 1962).
 A. J. ARBERRY, *Revelation and Reason in Islam* (London, 1957).
 ——, *Sufism, an Account of the Mystics of Islam* (London, 1951).
 ——, *The Romance of Ruba'iya* (1958).
 R. ARNALDEZ, *Grammaire et théologie chez Ibn Hazm de Cordoue* (Paris, 1956).
 ——, *Hallaj ou la religion de la Croix* (Paris, 1960).
 Sir Thomas ARNOLD, *The Preaching of Islam* (London, 1896).
 M. ASIN PALACIOS, *Aben Hazm de Cordoba, y su historia de las ideas religiosas* (1927-8), 2 vols.
 ——, *Abenmasarra y su escuela: Origines de la filosofia hispano-musulmana* (Madrid, 1914).
 ——, *Algazel, dogmática, moral, ascética* (Saragossa, 1901).
 ——, *La Espiritualidad de Algazel y su sentido Christiano* (Madrid-Granada, 1934-41), 4 vols.
 AVERROES, *On the Harmony of Religion and Philosophy*, trans. F. Hourani (London, 1961).
 ——, *Tahafut al-tahafut (The Incoherence of the Incoherence)*, trans. S. van der Berg (London, 1954), 2 vols.
 AVICENNE, special issue of the *Revue du Caire* (Cairo, 1951).
 ——, *Le récit de Hayy ibn Yaqzan*, trans. H. Corfin (Teheran, 1953).
 ——, *Livre des Définitions*, trans. A.-M. Goichon (Cairo, 1965).

—, *Livre des Directives et Remarques*, trans. A.-M. Goichon (Paris, 1951).

—, *Le Livre de science*, trans. M. Achena and H. Massé (Paris, 1955-8).

A. AWA, *L'Esprit critique des Frères de la Pureté* (Beirut, 1948).

BAGHDADI, *Moslem Sects and Schisms*, trans. K. Sesley (Columbia, New York, 1920).

J. BAKOS, *Psychologiead' Ibn Sina d'après son oeuvre ash-Shifa* (Prague, 1956), 2 vols.

S. L. de BEAURECUEIL, *Khwadja Abdullah Ansari* (Beirut, 1965).

A. BEL, *La Religion musulmane en Berbérie* (Paris, 1938).

R. BELL, *The Origin of Islam in its Christian Environment* (1926).

T. J. de BOER, *Die Widersprüche der Philosophie nach al-Gazzali und ihr Ausgleich durch Ibn Roshd* (Strasbourg, 1894).

—, *Geschichte der Philosophie in Islam* (Stuttgart, 1901). English trans. E. R. Jones (1933).

BOKHARI, *L'authentique tradition musulmane* (choice of hadits by G.-H. Bousquet (Paris, 1964).

—, *Les traditions islamiques*, trans. O. Houdas and W. Marçais (Paris, 1903-8), 4 vols.

M. BOUGES, *Essai de chronologie des œuvres de al-Ghazali*, ed. M. Allard (Beirut, 1959).

H. BRENTJES, *Die Imamatlehren im Islam nach der Darstellung des Ash'ari* (Berlin, 1964).

E. L. BUTCHER, *The Story of the Church of Egypt* (London, 1897), 2 vols.

E. F. CALVERLEY, *Islam: an Introduction* (Cairo, 1958).

CARRA DE VAUX, *Avicenne* (Paris, 1900).

—, *Gazali* (Paris, 1902).

—, *La doctrine de l'Islam* (Paris, 1909).

O. CHAHINE, *Ontologie et théologie chez Avicenne* (Paris, 1962).

A. CHEDEL, *Le Soufisme, esquisse d'une histoire de la mystique musulmane* (Lausanne, 1949).

J. CHELHOD, *Les structures du sacré chez les Arabes* (Paris, 1964).

H. CORBIN, *Avicenne et le Récit visionnaire* (Teheran, 1954), 2 vols.

—, *Histoire de la philosophie islamique* (Paris, 1964).

—, *Suhrawardi d'Alep, fondateur de la doctrine illuminative* (Paris, 1939).

—, *Terre céleste et corps de Résurrection* (Paris, 1960).

—, *Trilogie ismaélienne* (Teheran-Paris, 1961).

—, and M. MO'IN, *Commentaire de la qasida ismaélienne d'Abul-Haitham Jorjani* (Teheran-Paris, 1955).

N. J. COULSON, *A History of Islamic Law* (Edinburgh, 1964).

DARMESTETER, *Le Mahdi depuis les origines de l'islam jusqu'à nos jours* (Paris, 1885).

E. DERMENGHEM, *L'éloge du vin, poème mystique de Omar ibn al Farid* (Paris, 1931).

F. DIETERICI, *Die hilosophie der Araber* (1886).

E. DINET and SLIMAN BEN IBRAHIM, *Le Pèlerinage à la Maison Sacrée d'Allah* (Paris, 1962).

R. P. A. DOZY, *Essai sur l'histoire de l'Islamisme*, trans. Chauvin (1879).

J. van ESS, *Die Erkenntnisslehre des Adudaddin al-Ici* (Wiesbaden, 1966).

—, *Die Gedankenwelt des Harit al-Muhasibi* (Bonn, 1961).

FARABI, *Aphorism of the Statesman*, trans. D. M. Dunlop (Cambridge, 1961).

—, *Idées des habitants de la Cité vertueuse*, trans. Jaussen, Karam et Chlala (Cairo, 1949).

M. FATHY, *La doctrine musulmane de l'abus des droits* (Lyons-Paris, 1913).

FAZLUR RAHMAN, *Avicenna's Psychology* (London, 1952).

A. A. GALWASH, *The Religion of Islam* (New York, 1947).

L. GARDET, *Connaitre l'Islam* (Paris, 1958).

—, *Expériences mystiques en terres non-chrétiennes* (Paris, 1953).

—, *La cité musulmane* (Paris, 1954).

—, *La pensée religieuse d'Avicenne* (Paris, 1951).

—, et M.-M. ANAWATI, *Introduction à la théologie musulmane* (Paris, 1948).

M. GAUDEFROY-DEMOMBYNES, *Le pèlerinage à la Mecque* (Paris, 1923).

L. GAUTHIER, *Averroès* (Paris, 1949).

—, *Hayy ben Yaqdhan*, roman philosophique d'Ibn Thofail, 2nd ed. (Paris, 1936).

—, *Ibn Thofail, sa vie, ses œuvres* (Paris, 1909).

—, *Introduction à la philosophie musulmane* (Paris, 1923).

—, *La théorie d'Ibn Ruchd sur les rapports de la religion et de la philosophie* (Paris, 1909).

K. GEORR, *Les Catégories d'Aristote dans leurs versions syro-arabes* (Beirut, 1948).

GHAZALI (AL-), *Al-Munqid min al-dalal*, trans. J. Jabre (Beirut, 1959).

—, *Book of Counsel for Kings*, trans. F. E. C. Bagley (London, 1964).

—, *La Perle précieuse*, trans. L. Gauthier (Geneva, 1878).

—, *Lettre au disciple*, trans. T. Sabbagh (Beirut, 1959).

—, *L'obligation d'ordonner le bien et d'interdire le mal*, trans. L. Bercher (Tunis, 1961).

—, *Mishkat al-Anwar*, trans. W. H. T. Gairdner (London, 1924).

—, *O Jeune homme*, trans. by T. Sabbagh (Beirut, 1951).

Sir Hamilton GIBB, *Mohammedanism* (1949).

de GOBINEAU, *Les religions et les philosophies dans l'Asie centrale* (Paris, 1928).

A. M. GOICHON, *Introduction à Avicenne. Son épître des définitions* (Paris, 1933).

—, *La distinction de l'essence et de l'existence d'après Ibn Sina* (Paris, 1937).

—, *La philosophie d'Avicenne et son influence en Europe* (Paris, 1944).

—, *Lexique de la langue philosophique d'Ibn Sina* (Paris, 1938).

L. GOLDZIHER, *Die Zahuriten. Ihr Lehresystem und ihre Geschichte* (Leipzig ? 1884).

—, *Le dogme et la loi de l'Islam*, French trans. F. Arin (Paris, 1920).

—, *Mohammed ibn Toumert et la théologie de l'Islam dans le nord de l'Afrique au XIe siècle*, trans. M. Gaudefroy-Demombynes (Algiers, 1905).

—, *Muslimische Studien* (Halle, 1882–90), 2 vols.—*Etudes sur la tradition islamique*, extracts from the preceding work, trans. L. Bercher (Paris, 1952).

—, *Vorlesungen über den Islam*, 2nd ed., revised by F. Babinger (Heidelberg, 1925).

A. GONZALEZ PALENCIA, *Alfarabi, Catalogo de las Ciencias* (Madrid, 1932).

—, *El Islam y Occidente* (Madrid, 1931).

—, *Ibn Tufail, El Filosofo Autodidacto* (Madrid, 1934).

G. E. VON GRUNEBEAUM, *Muhammadan Festivals* (New York, 1951).

M. GUIDI, *La Lotta tra l'Islam e Il Manicheismo* (Rome, 1927).

—, *Storia della religione dell'Islam* (Turin, 1935).

A. GUILLAUME, *Islam* (1934).

—, *The Traditions of Islam* (Oxford, 1924).

A. S. HALKIN, *Muslim Schisms and Sects*, by Abu Mansur Abd al-Qahir al-Baghdadi (Tel-Aviv, 1935).

R. HARTMANN, *Al-Kushairis Darstellung des Sufitums* (Berlin, 1914).

W. HEFFENING, *Beiträge zum Rechts- und Wirtschaftsleben des islamischen Orient* (1925).

M. HORTEN, *Die Metaphysik des Averroes* (Halle, 1912).

—, *Die Philosophie des Islams* (1924).

—, *Die philosophischen Systeme der spekulativen Theologie im Islam* (Bonn, 1912).

G. F. HOURANI, *Averroes on the Harmony of Religion and Philosophy* (London, 1961).

IBN AL-NAFIS, *The Theologus auto-didactus*, trans. M. Meyerhof and J. Schacht (Oxford, 1968).

IBN QUDAMA, *Censure of Speculative Theology*, ed. and trans. G. Makdisi (London, 1962).

IBN RUSHD, *Kitab Fasl al-Maqal* (on the Harmony of Religion and Philosophy), trans. G. Hourani (Beirut and London, 1961).

IBN TUFAIL, *Hayy ibn Yaqdhan*, trans. L. Gauthier (Algiers, 1900); trans. A. N. Nader (Beirut, 1963).

IKHWAN AL-SAFĀ, *Die Propaedeutik des Araber im X. Jahrhundert*, trans. F. Dieterici (Berlin-Leipzig, 1861–72).

SIR MOHAMMED IQBAL, *Islamic Sufism* (London, 1933).

—, *Six Lectures on the Reconstruction of Religious Thought in Islam* (Lahore, 1930).

W. IVANOV, *A Brief Survey of the Evolution of Isma'ilism* (1962).

—, *A Guide to Ism'ili Literature* (1933; 2nd ed., 1958).

—, *Isma'ilī Literature, a Bibliographical Survey* (Teheran, 1963).

—, *The Alleged Founder of Isma'ilism* (Bombay, 1946); 2nd ed., (1956).

F. JABRE, *La notion de certitude chez Ghazali* (Paris, 1958).

—, *La notion de ma'rifa chez Ghazali* (Beirut, 1958).

H. JAHIER and A. NOUREDDINE, *Anthologie de textes poétiques attribués à Avicenne* (Algiers, 1960).

A. JEFFERY, *A Reader on Islam* (Columbia University, 1962).

—, *Islam: Muhammad and His Religion* (New York, 1958).

T. W. JUYNBOLL, *Handbuch des islamischen Gesetzes nach der Lehre der shafitischen Schule* (Leiden, 1910).

R. KHAWAM, *Propos d'amour des Mystiques musulmans* (Paris, 1960).

H. LAMMENS, *L'Islam, croyances et institutions* (Beirut, 1926).

R. LAOUST, *La profession de foi d'Ibn Batta* (Damascus, 1958).

H. LAOUST, *Le Précis de Droit d'Ibn Qudama* (Beirut, 1950).

—, *Les schismes dans l'Islam* (Paris, 1965).

S. LEMAITRE, *Le Mystère de la mort dans les religions d'Asie* (Paris, 1963).

R. LERNER and M. MAHDI, *Medieval Political Philosophy, A Sourcebook* (1963).

E. LEVI-PROVENÇAL, *Islam d'Occident* (Paris, 1948).

B. LEWIS, *The origins of Isma'ilism* (Cambridge, 1948).

J. LINANT DE BELLEFONDS, *Traité de droit musulman comparé* (Paris, 1965).

D. B. MACDONALD, *Development of Muslim Jurisprudence and Constitutional Theory* (London, 1903).

—, *The Life of Ghazali, with Special Reference to his Religious Experience and Opinion* (1899).

—, *The Religious Attitude and Life in Islam* (Beirut, 1965).

I. MADKOUR, *La place d'al-Farabi dans l'école philosophique musulmane* (Paris, 1934).

—, *L'Organon d'Aristote dans le monde arabe* (Paris, 1934).

MAIMONIDE, *Le Guide des Egarés* (Paris, 1959), 3 vols.

G. MAKDISI, *Ibn Aqil et la résurgence de l'Islam traditionaliste au XIe siècle* (Damascus, 1963).

H. MASSÉ, *L'Islam* (Paris, 1930).

L. MASSIGNON, *Essai sur les origines du lexique technique de la mystique musulmane* (Paris, 1922); 2nd ed. (Paris, 1954).

—, *La Passion d'al-Hesayn-ibn-Mansour al-Hallaj, martyr mystique de l'islam* (Paris, 1922), 2 vols.

—, *Opera minora* (Lebanon, 1963), 3 vols.

—, *Parole donnée* (Paris, 1962).

R. J. MCCARTHY, *The Theology of al-Ash'ari* (Beirut, 1953).

W. MCKANE, *Al Ghazali's Book of Fear and Hope* (Leiden, 1962).

MEHMED ALI AINI, *Un grand saint de l'islam. Abd al-Kadir Guilani* (Paris, 1938).

A. F. MEHREN, *Exposé de la réforme de l'Islamisme* (St Petersburg, 1879).

F. MEIER, *Vom Wesen der islamischen Mystik* (1943).

L. MILLIOT, *Introduction à l'histoire du droit musulman* (Paris, 1953).

M. MOLÉ, *Les mystiques musulmans* (Paris, 1965).

E. MONTEL, *L'Islam* (Paris, 1921).

M. M. MORENO, *Antologia della mistica arabo-persana* (Bari, 1951).

—, *La Dottrina dell'Islam* (Bologna, 1935).

—, *Mistica araba* (1942).

Y. MOUBARAC, *L'Islam* (Paris, 1962).

M. MUHAMMAD ALI, *The Religion of Islam* (Lahore, 1936).

S. MUNK, *Mélanges de philosophie juive et arabe*, 2nd ed. (Paris, 1927).

A. NADER, *Le système philosophique des Mu'tazila* (Beirut, 1956).

R. A. NICHOLSON, *Studies in Islamic Mysticism* (Cambridge, 1921).

—, *The Mystics of Islam* (1914).

OSMAN YAHYA, *Histoire et classification de l'oeuvre d'Ibn Arabi* (Damascus, 1964), 2 vols.

F. M. PAREJA, *Islamologia* (Beirut, 1951).

R. PARET, *Symbolic des Islams* (Stuttgart, 1958).

W. PATTON, *Ahmad ibn Hanbal and the Mihna* (Leiden, 1897).

F. PELTIER, *Le livre des ventes du Cahih d'el-Bokhari* (Algiers, 1910).

—, *Le livre des ventes du Mourwatta de Malik ibn Anas* (Algiers, 1911).

A. PERIER, *Yahya ibn Adi, un philosophe arabe chrétien du Xe siècle* (Paris, 1920).

S. PINÈS, *Beiträge zur islamischen Atomenlehre* (Berlin, 1936).

A. QUERRY, *Droit musulman. Recueil de lois concernant les musulmans schyites* (1872), 2 vols.

RATHJENS, *Die Pilgerfahrt nach Mekka* (Hamburg, 1948).

E. RENAN, *Averroès et l'Averroïsme* (Paris, 1866).

N. RESCHER, *Al-Farabi, an annotated bibliography* (Pittsburgh, 1962).

—, *Al-Farabi's Short Commentary on Aristotle's 'Prior Analytics'* (Pittsburgh, 1963).

—, *Al-Kindi, An annotated Bibliography* (Pittsburgh, 1964).

—, *Studies in the history of Arabic logic* (Pittsburgh, 1963).

—, *The development of Arabic logic* (Pittsburgh, 1964).

H. RINGGREN, *Studies in Arabian Fatalism* (Uppsala-Wiesbaden, 1955).

SACHAU, *Mohammedanisches Recht nach shafiitischer Lehre* (Stuttgart, 1897).

S. DE SACY, *Exposé de la religion des Druzes* (Paris, 1838), 2 vols.

G. H. SADIGHI, *Les Mouvements religieux iraniens au IIe et au IIIe siècle de l'hégire* (Paris, 1938).

D. SALIBA, *Etude sur la métaphysique d'Avicenne* (Paris, 1926).

J. SCHACHT, *An Introduction to Islamic Law* (Oxford, 1964).

—, *Esquisse d'une Histoire du droit musulman*, trans. De Jeanna and F. Arin (Paris, 1953).

—, *The Origin of Mohammedan Jurisprudence* (1950); 2nd ed. (1953).

L. SCHAYA, *La doctrine soufique de l'Unité* (Paris, 1962).

A.-M. SCHIMMEL, *Spiritual Aspects of Islam* (Venice, 1963).

M. S. SEALE, *Muslim Theology: a Study of Origins with References to the Church Fathers* (London, 1964).

SHAHRESTANI, *Religionsparteien und Philosophenschule*, trans. Haarbrücker (Halle, 1850-1).

F. SHEHADI, *Ghazali's unique unknowable God* (Leiden, 1964).

M. SMITH, *An Early Mystic of Baghdad* (London, 1935).

—, *Rabi'a the Mystic* (Cambridge, 1928).

D. SOURDEL, *L'Islam* (Paris, 1954).

B. SPULER, *Handbuch der Orientalistik, Religionsgeschichte des Orients in der Zeit der Weltreligionen* (Leiden, 1961).

—, *Handbuch der Orientalistik, Orientalisches Redht* (Leiden, 1964).

H. STIEGLECKER, *Die Glaubenslehren des Islam* (Paderborn, 1962).

E. TAPIERO, *Le dogme et les rites de l'Islam par les textes* (Paris, 1957).

TOR ANDRAE, *Die Ursprung des Islams und das Christentum* (Uppsala, 1926). French trans. J. Roche (Paris, 1955).

—, *Islamische Mystiker* (Stuttgart, 1960).

A. S. TRITTON, *Islam: Belief and Practices* (London, 1951).

—, *Muslim Theology* (London, 1947).

E. TYAN, *Histoire de l'Organisation judiciaire en pays d'Islam* (Paris, 1948–53), 2 vols.

L. V. VAGLIERI, *Islam* (Naples, 1946).

—, *L'Islam da Maometto al secolo XVI* (Milan, 1963).

R. WALZER, *Greek into Arabic, Essays on Islamic Philosophy* (Oxford, 1962).

W. M. WATT, *Free Will and Predestination in Early Islam* (London, 1947).

—, *Islam and the Integration of Society* (London, 1961).

—, *Islamic Surveys. Islamic Philosophy and Theology* (Edinburgh, 1963).

—, *Muslim Intellectual: a Study of al-Ghazali* (Edinburgh, 1963).

—, *The Faith and Practice of al-Ghazali* (London, 1953).

A. WEISSNER, *Der Muhammedanismus: Geschichte und Lehre des Islams* (Leipzig, 1923).

A. J. WENSINCK, *A Handbook of Early Muhammadan Tradition* (Leiden, 1927).

—, *Concordance et indices de la tradition musulmane* (Leiden, in course of publication since 1933).

—, *La pensée de Ghazali* (Paris, 1940).

—, *Les preuves de l'existence de Dieu dans la théologie musulmane* (Amsterdam, 1936).

—, *The Muslim Creed* (Cambridge, 1932).

YAHYA EL-KHACHAB, *Nasir è Hosrau* (Cairo, 1940).

VIII. ARAB SCIENCE

A. ARBERRY, *The Spiritual Physik of Rhazes* (London, 1950).

G. BERGSYRAESSER, *Hunain ibn Ishaq und seine Schule* (Leiden, 1933).

E. G. BROWNE, *Arabian Medicine* (1921).

D. CAMPBELL, *Arabian Medicine and its Influence on the Middle Ages* (London, 1926), 2 vols.

F. J. CARMODY, *Arabic Astronomical and Astrological Sciences in Latin Translation. A Critical Bibliography* (Berkeley-Los Angeles, 1956).

E. CHASSINAT, *Un papyrus médical copte* (Cairo, 1921).

J. J. CLÉMENT-MULLET, *Le Livre de l'Agriculture d'Ibn al-Awam* (Paris, 1864).

G. COLIN, *Avenzoar. Sa vie et ses œuvres* (Paris, 1911).

D. M. DUNLOP, *Arabic Science in the West* (Karachi, 1966).

G. FERRAND, *Introduction à l'astronomie nautique arabe* (Paris, 1928).

S. HAMARNEH, *Bibliography on Medicine and Pharmacy in Medieval Islam* (Leiden, 1964).

E. J. HOLMYARD, *Alchemy* (1957).

—, *Book of Knowledge Acquired Concerning the Cultivation of Gold, by Abul-Qasim al-Iraqi* (Paris, 1923).

IBN ABI USAIBI'A, *Uyun al-anba fi tabaqat al-atibba*, ed. and trans. *Jahier et A. Noureddine* (Algiers, 1958).

IBNAL-BEITHAR, *Traité des simples*, trans. L. Leclerc (Paris, 1877–83), 3 vols.

A. ISSA, *Histoire des Bimaristans à l'époque islamique* (Cairo, 1928).

E. S. KENNEDY, *A Survey of Islamic Astronomical Tables* (Philadelphia, 1956).

P. KRAUS, *Jabir b. Hayyan. Contribution à l'histoire des idées scientifiques dans l'Islam* (Cairo, 1942–3), 2 vols.

P. KUNITZSCH, *Untersuchungen zur Sternnomenklatur des Arabes* (Wiesbaden, 1961).

LECLERC, *Histoire de la médecine arabe* (Paris, 1876).

B. LEWIN, *The Book of the Plants of Abu Hanifa al-Dinawari* (Uppsala, 1953).

F. S. MASON, *Histoire des sciences*, trans. M. Vergnaud (Paris, 1956).

M. MEYERHOF, *Die Materia medica des Disocorides bei den Arabern* (1933).

—, *The Book of the Ten Treatises on the Eye Ascribed to Hunain ibn Ishaq* (Cairo, 1928).

—, *Un glossaire de matière médicale composé par Maimonide* (Cairo, 1940).

—, *Von Alexandrien nach Bagdad* (Berlin, 1930).

—, and G. P. SOBHY, *The Abridged Version of the Book of Simple Drugs of Ahmad al-Ghafiqi* (Cairo).

A. MIELI, *La Science arabe et son rôle dans l'évolution scientifique mondiale* (Leiden, 1938); 2nd ed. (1966).

S. H. NASR, *An Introduction to Islamic Cosmological Doctrines. Conceptions of Nature and Methods for its Study by the Ikhwan al-Safa, al-Biruni and Ibn Sina* (Cambridge, 1964).

H. RITTER and R. WALZER, *Arabische Uebersetzungen griechischer Aerzte in Stambuler Bibliotheken* (Berlin, 1934).

F. ROSENTHAL, *Das Fortleben der Antike in Islam* (Zurich et Stuttgart, 1963).

J. RUSKA, *Arabische Alchemisten* (Heidelberg, 1924).

T. SARNELLI, *La medicina araba* (Rome, 1943).

G. SARTON, *Introduction to the History of Science* (Baltimore, 1927–48), 3 vols.

P. SBATH and M. MEYERHOF, *Le livre des questions sur l'œil de Hinain ibn Ishaq* (Cairo, 1938).

J. SCHACHT and M. MEYERHOF, *The Medico-philosophical Controversy Between Ibn Butlan of Baghdad and Ibn Ridwan of Cairo* (Cairo, 1937).

M. SCHRAMM, *Ibn al-Haytham's Weg zur Physik* (Wiesbaden, 1963).

SEDILLOT, *Traité des instruments astronomiques des Arabes* (Paris, 1834).

M. STEINSCHNEIDER, *Die arabischen Uebersetzungen aus den Griechischen* (Leipzig, 1893).

SUTER, *Die Mathematiker und Astronomen der Araber* (Leipzig, 1910).

R. TATON, *Histoire générale des sciences*, vol. I, *La science antique et médiévale* (Paris, 1958).

WUESTENFELD, *Geschichte der arabischen Aerzte und Naturforscher* (Göttingen, 1840).

IX. LITERARY EXPRESSION

J.-M. ABD-EL-JALIL, *Brève Histoire de la Littérature arabe* (Paris, 1943).

ABD EL-LATIF, *Relation de l'Egypte par Abdalatiph*, trans. S. de Sacy (Paris, 1810).

H. F. AMEDROZ and D. S. MARGOLIOUTH, *The Eclipse of the Abbasid Caliphate* (Oxford, 1920-1), 7 vols.

A. W. J. ARBERRY, *Classical Persian Literature* (New York, 1958).

—, *Moorish Poetry, A Translation of the 'Pennants': an Anthology Compiled by the Andalusian Ibn Sai'id* (Cambridge, 1953).

—, *The Seven Odes, the First Chapter in Arabic Literature* (London, 1957).

F. A. ARNOLD, *Septem moallakat, carmina antiquissima arabum* (Leipzig, 1850).

M. ASIN PALACIOS, *Islam and the Divine Comedy* (London, 1926).

BAKRI (EL-), *Description de l'Afrique septentrionale*, trans. Mac Guckin de Slane (1911-3).

BALADHURI, *Futuh al-buldan*, trans. Hitti and Murgotten (New York, 1916-24), 2 vols; trans. O. Rescher (Leipzig, 1917), 2 vols.

C. A. BARBIER DE LEYNARD, *Dictionnaire géographique, historique et littéraire de la Perse et des contrées adjacentes*, Extract from Mo'djam al-Bouldan de Yaqout (Paris, 1861).

—, *La poésie en Perse* (Paris, 1877).

R. BASSET, *La poésie arabe anté-islamique* (Paris, 1880).

A. BAUMSTARK, *Geschichte der syrischen Literatur* (Bonn, 1922).

A. BAUSANI, *Storia della letteratura persiana* (1960).

BIRUNI, *India*, trans. E. Sachau (London, 1888).

—, *The Chronology of ancient nations*, trans. E. Sachau (London, 1879).

—, *Extraits des principaux géographes arabes du moyen âge* (Paris-Beirut, 1932).

R. BLACHÈRE, *Histoire de la littérature arabe des Origines à la fin du XVe siècle de J.-C.* (Paris, 1952-66).

—, *Motanabbi. Un poète arabe du IVe siècle de l'hégire (Xe siècle de J.-C.): Abou t-Tayyib al-Motanabbi* (Paris, 1955).

R. BLACHÈRE and H. DARMAUN, *Extraits des principaux géographes du moyen âge* (Paris, 1957).

R. BOUCHER, *Divan de Férazdak* (Paris, 1870).

C. BROCKELMANN, *Die syrische und die christlische-arabische Literatur* (Leipzig, 1907).

—, *Geschichte der Arabischen Literatur* (Weimar-Berlin, 1897-1902), 2 vols.; 2nd ed. (Leiden, 1937-47), 3 vols. and Suppl.

E. G. BROWNE, *A Literary History of Persia* (Cambridge, 1902-28), 4 vols.

M. CANARD, *Akhbar ar-Radi billah wa'l-Muttaqi billah* (Algiers, 1946-50), 2 vols.

—, *Vie de l'Ustadh Jaudhar* (Algiers, 1958).

E. CERULLI, *Il libro della Scala e la questione delle fonti arabo-spagnole della Divine Commedia* (Vatican, 1949).

J. B. CHABOT, *Littérature syriaque* (Paris, 1935).

V. CHAUVIN, *Bibliographie des ouvrages arabes ou relatifs aux Arabes publiés dans l'Europe chrétienne de 1810 à 1885* (Liège, 1892-1922), 12 vols.

W. A. CLOUSTON, *Arabian Poetry for English Readers* (Glasgow, 1881).

A. COUR, *Un poète arabe d'Andalousie: Ibn Zaidun* (Constantine, 1920).

H. DERENBOURG, *Oumara du Yémen sa vie et son oeuvre* (Paris, 1897-1904).

—, *Ousama ibn Mounkidh* (Paris, 1893).

E. DERMENGHEM, *Les plus beaux textes arabes* (Paris, 1951).

DJUWAINI, *The History of the World-Conqueror*, trans. J. A. Boyle (Manchester, 1958), 2 vols.

R. DOZY, *Recherches sur l'histoire et la littérature de l'Espagne pendant le moyen âge* (Leiden, 1881); 3 vols.

R. DUVAL, *Anciennes littératures chrétiennes: la littérature syriaque* (Paris, 1899); 3rd ed. (1907).

N. ELISSEEFF, *La description de Damas d'Ibn Asakir* (Damascus, 1959).

—, *Thèmes et motifs des Mille et Une Nuits* (Beirut, 1949).

E. FAGNAN, *Extraits inédits relatifs au Maghreb* (Algiers, 1924).

G. FERRAND, *Relations de voyages et textes géographiques arabes, persans et turcs, relatifs à l'Extrême-Orient du VIII^e au XVIII^e siècles* (Paris, 1913-4), 2 vols.

—, *Voyage du marchand arabe Sulayman en Inde et en Chine* (Paris, 1922).

FIRDOUSSI, *Le Livre des Rois*, trans. J. Mohl (Paris, 1876-8), 7 vols.

F. GABRIELI, *Storia della letteratura araba* (Milan, 1952).

—, *Storici arabi delle Crociate* (1957).

M. I. GERHARDT, *The Art of Story-telling, a Literary Study of the Thousand and One Nights* (Leiden, 1963).

SIR HAMILTON GIBB, *Arabic Literature* (Oxford, 1963).

—, *The Damascus Chronicle of the Crusades Extracted and Translated from the Chronicle of Ibn al-Qalanisi* (London, 1932).

I. GOLDZIHER, *A Short History of Arabic Literature*, trans. J. Somogyi (Hyderabad, 1959).

A. GONZALES-PALENCIA, *Historia de la literatura arabigo-española* (Barcelona-Buenos Aires, 1945).

GORGANI, *Le roman de Wis et Ramin*, trans. H. Massé (Paris, 1959).

G. GRAF, *Geschichte der christlichen arabischen Literatur* (Vatican, 1944–53), 5 vols.

GRANGERET DE LAGRANGE, *Anthologie arabe* (Paris, 1828).

G. E. VON GRUNEBAUM, *Kritik und Dichtkunst, Studien zur arabischen Literaturgeschichte* (Wiesbaden, 1955).

R. GUEST, *Life and Works of Ibn er Rumi* (London, 1944).

HAJI-KHALFA, *Lexicon bibliographicum et encyclopaedicum*, ed. and trans. Flügel (Leipzig-London, 1835–58), 7 vols.

HADJ-SADOK, *Description du Maghreb et de l'Europe au IXe siècle* (Algiers, 1949).

HAMADHANI, *The Maqamat*, trans. W. Prendergast (Madras, 1915).

—, *Choix de Maqamat*, trans. R. Blachère and P. Masnou (Paris, 1957).

—, *Geographie der arabischen Halbinsel*, trans. Mueller (Leiden, 1891).

J. VON HAMMER-PURGSTALL, *Literaturgeschichte der Araber* (Vienna, 1950–56), 7 vols.

HARAWI, *Guide des lieux de pèlerinage*, trans. J. Sourdel-Thoumine (Damascus, 1957).

P. K. HITTI, *Usama b. Mungidh. An Arab-Syrian Gentleman* (New York, 1929).

C. HUART, *Le Livre de la Création et de l'Histoire de Motahhar ben Tahir el-Maqdisi* (Paris, 1899–1907), 6 vols.

—, *Littérature arabe* (Paris, 1912).

Hudud al-alam. A Persian Geography, trans. and explained by V. Minovsky (London, 1937).

IBN ABD AL-HAKAM, *Conquête de l'Afrique du Nord et de l'Espagne*, trans. A. Gateau (Algiers, 1947).

IBN CHARAF AL-QAYRAWANI, *Questions de critique littéraire*, ed. and trans. C. Pellat (Algiers, 1953).

IBN DJUBAIR, *Voyages*, trans. M. Gaudefroy-Demombynes (Paris, 1949–63); Broadhurst (London, 1952); Schiaparelli (Rome, 1906).

IBN FADLAN, *Relation du voyage d'Ibn Fadlan chez les Bulgares de la Volga*, trans. M. Canard, *Annales d'Etudes orientales*, XVI (Algiers, 1958).

IBN HAUQAL, *Configuration de la terre*, trans. J. H. Kramers and G. Wiet (Paris, 1964), 2 vols.

IBN HAZM, *Epître morale*, trans. N. Tomiche (Beirut, 1961).

—, *The Ring of the Dives*, trans. A. J. Arberry (London, 1953).

—, *Le collier de la colombe*, trans. Bercher (Algiers, 1949).

IBN KHALDUN, *Prolegomènes*, trans. Mac Guckin de Slane (Paris, 1862–8), 3 vols.; trans. F. Rosenthal (New York, 1958), 3 vols.

IBN KHALLIKAN, *Biographical Dictionary*, trans. M. G. de Slane (Paris-London, 1842–71), 4 vols.

IBN KHURDADHBEH, *Kitab al-masalik wal-mamalik*, trans. Goeje (Leiden, 1889).

IBN AL-MUQAFFA, *Le Livre de Kalila et Dimna*, trans. A. Miquel (Paris, 1957).

IBNAL-QALANISI, *Damas de 1075 à 1154*, trans. R. Le Tourneau (Damascus, 1952); trans. Sir Hamilton Gibb (London, 1932).

IBN QOTAIBA, *Introduction au livre de la poésie et des poètes*, text and trans. M. Gaudefroy-Demombynes (Paris, 1947).

IBN RUSTEH, *Les Atours précieux*, trans. G. Wiet (Cairo, 1955).

IBN SERAPION, 'Description of Mesopotamia', *Journal of Royal Asiatic Society*, June–April 1895.

IBN AL-TIQTAQA, *Histoire des dynasties musulmanes*, trans. E. Amar (Paris, 1910).

IDRISI, *Géographie*, trans. A. Jaubert (Paris, 1836–40), 2 vols.

—, *Description de l'Afrique et de l'Espagne*, trans. and ed. R. Dozy and J. de Goeje (Leiden, 1864–6).

IMRUL-QAIS, *Diwan*, trans. M. G. de Slane (Paris, 1837).

INOSTRANZEV, *Iranian Influence on Moslem Literature*, trans. C. K. Nariman (Bombay, 1918).

J. JACOB, *Studien in arabischen Geographen* (Berlin, 1891–2).

W. JWAIDEH, *The Introductory Chapters of Yaqut's Mu'gam al-Buldan* (Washington, 1959).

KAMAL AL-DIN, *Histoire d'Alep*, trans. E. Blochet (Paris, 1896–8).

I. KEIEANI, *Abu Hayyan at-Tawhidi, essayiste arabe au IVe siècle de l'hégire* (Beirut, 1950).

R. KHAWAM, *La poésie arabe* (Paris, 1960).

—, *Nouvelles arabes* (Paris, 1964).

I. KRATCHKOVSKY, *Histoire de la littérature géographique arabe*, in Russian (Complete works, bk V, Moscow, 1957).

F. KRENKOW, *The Poems of Tufail ibn Auf al-Ghanawi and et-Tirimmah ibn Hakim at-Ta'yi* (London, 1927).

KUMAIT, *Hashimiyat*, trans. Horovitz (Leiden, 1904).

LABID, *Die Gedichte des Lebid*, trans. A. Hueber (Leiden, 1891).

H. LAOUST, *La vie et l'œuvre d'Abul-Ala al-Ma'arri* (1956).

J. LATZ, *Das Buch der Wezire und Staatssekretäre von Ibn Abdus al-Gahsiyari* (1958).

G. LECOMTE, *Ibn Qutayba* (Damascus, 1965).

E. LEVI-PROVENCAL and E. GARCIA-GOMEZ *Una crónica anónima de Abd al-Rahman III al-Nasir* (Madrid-Grenada, 1950).

R. LEVY, *Persian Literature. An Introduction* (London 1923).

B. LEWIS and P. M. HOLT, *Historians of the Middle East* (London 1962).

SIR CHARLES LYALL, *Translations of Ancient Arab Poetry* (London 1885).

L. MACHUEL, *Les auteurs arabes* (Paris 1924).

MAKKARI, *Analectes de l'histoire et de la littérature des Arabes d'Espagne* trans. R. Dozy, Dugat Kregl and Wright (1855–61).

W. MARÇAIS *Les origines de la prose littéraire arabe. Revue Africaine*, LXVIII.

D. MARGOLIOUTH, *Lectures on Arabic Historians* (Calcutta, 1930).

—, *The Letters of Abu l-Ala* (Oxford, 1898).

A. S. MARMARDJI, *Textes géographiques arabes sur la Palestine* (Paris, 1951).

MARRAKOCHI, *Histoire des Almohades*, trans. E. Fagnan (Algiers, 1893).

MARVAZI, *On China: the Turks and India*, ed. and trans. T. Minorsky (London, 1942).

H. MASSÉ, *Anthologie persane* (Paris, 1950).

—, *Essai sur le poète Saadi* (Paris, 1919).

—, *Firdoussi et l'épopée nationale* (Paris, 1935).

MAS'UDI, *Le Livre de l'Avertissement*, trans. Carra de Vaux (Paris, 1896).

—, *Les Prairies d'or*, trans. Barbier de Meynard and Pavet de Courteille (1861-77), 9 vols.; 2nd ed., trans. C. Pellat (in course since 1962).

MATHIEU D'EDESSE, *Chronique*, trans. Dulaurier (Paris, 1858).

MAWERDI, *Les statuts gouvernementaux*, trans. E. Fagnan (Paris, 1915).

A. F. MEHREN, *Die Rhetorik der Araber* (Copenhagen, 1853).

MICHEL LE SYRIEN, *Chronique*, trans. J. B. Chabot (Paris, 1900-10), 3 vols.

A. MIQUEL, *La géographie humaine du monde musulman* (Paris, 1967).

Z. MUBARAK, *La Prose arabe au IVe siècle de l'hégire* (Paris, 1931).

MUDJIR AL-DIN, *Histoire de Jérusalem et d'Hébron*, trans. Sauvage (Paris, 1876).

MUQADDASI, *Ahsan al-taqasim*, partly trans. A. Miquel (Damascus, 1963).

—, *Description de l'Occident musulman au IVe-Xe siècle*, trans. C. Pellat (Algiers, 1950).

MUTANABBI, *Recueil publié à l'occasion de son millénaire* (Beirut, 1936).

NABIGHA, *Diwan*, trans. H. Derenbourg (Paris, 1869).

C. A. NALLINO, *La Letteratura araba degli inizi all'epoca della dinastia umayyade* (Rome, 1948).

M. NALLINO, *Le poesie di an-Nabigha al-Ga'di* (Rome, 1953).

NASAWI, *Histoire du sultan Djelal ed-din Mankobirti*, ed. and trans. O. Houdas (Paris, 1895).

NASIR-I-KHUSRAU, *Sefer Nameh*, ed. and trans. C. Schefer (Paris, 1881).

R. A. NICHOLSON, *A Literary History of the Arabs* (London, 1907).

—, *Eastern Poetry and Prose* (Cambridge, 1922).

—, *Studies in Islamic Poetry* (Cambridge, 1921).

NIZAM ALEMULK, *Siasset Nameh*, ed. and trans. Schefer (Paris, 1893); English trans. H. Darke (London, 1960).

T. NOELDEKE, *Beiträge zur Kenntniss der Poesie der alten Araber* (Hanover, 1864).

A. R. NYKL, *A Book Containing the Risala Known as 'the Slave's Neck-Ring About Love and Lovers'* (Paris, 1932).

A. PAGLIARO and A. BAUSANI, *Storia della litteratura persiana* (Milan, 1960).

R. PARET, *Die Maghazi-Literatur* (Tübingen, 1930).

C. PELLAT, *Langue et littérature arabes* (Paris, 1952).

—, *Le Livre de la Couronne, attribué à Djahiz* (Paris, 1954).

—, *Le Livre des Avares* (Paris, 1951).

—, *Le milieu basrien et la formation de Gahiz* (Paris, 1953).

H. PÉRÈS, *La poésie andalouse en arabe classique au XIe siècle* (Paris, 1937), 2nd ed. (1953).

G. PFANMUELLER, *Handbuch der Islam-Literatur* (Berlin-Leipzig, 1923).

I. PIZZI, *Litteratura araba* (Milan, 1903).

F. PONS-BOIGUES, *Essay bio-bibliografico sobre los historiadores y geógrafos árabes y españoles* (Madrid, 1898).

QUDAMA IBN DJA'FAR, *Kitah al-kharadj*, ed. and trans. J. de Goeje (Leiden, 1889).

M. REINAUD, *Introduction générale à la géographie des Orientaux*, bk I of *la Géographie d'Aboul-Féda* (Paris, 1848).

—, *Relation des voyages faits par les Arabes et les Persans dans l'Inde et la Chine* (Paris, 1845), 2 vols.

O. RESCHER, *Abriss der arabische Literaturgeschichte* (Stuttgart, 1925–33), 2 vols.

—, *Beiträge zur arabischen Poesie* (Stuttgart, 1954–5).

G. RICHTER, *Das Geschichtsbild der arabischen Historiker des Mittelalters* (Tübingen, 1933).

J. RIKABI, *La poésie profane sous les Ayyoubides et ses principaux représentants* (Paris, 1949).

F. ROSENTHAL, *A History of Muslim Historiography* (Leiden, 1952); 2nd ed. (Leiden, 1968).

—, *Die arabische Autobiographie* (Rome, 1937).

F. RUECKERT, *Die Hamasa* (Stuttgart, 1846).

J. RYPKA, *Iranische Literaturgeschichte* (1959).

S. DE SACY, *Chrestomathie arabe* (Paris, 1826), 3 vols.

SA'ID EL-ANDALUSI, *Kitab Tabaqat al-umam*, trans. R. Blachère (Paris, 1935).

G. SALMON, *Introduction topographique à l'histoire de Bagdad* (Paris, 1904).

J. SAUVAGET, *Historiens arabes, pages choisies* (Paris, 1946).

—, *Introduction à l'histoire de l'Orient musulman* (Paris, 1943); 2nd ed., revised and completed by C. Cahen (Paris, 1961); English translation (Berkeley and Los Angeles, 1965).

—, *La Chronique de Damas d'al-Jazari* (Paris, 1919).

—, *Les Merveilles de l'Inde, Mémorial Jean Sauvaget* (Damascus, 1954).

—, *Les perles choisies d'Ibn ach-Chihna* (Beirut, 1933).

—, *Relation de la Chine et de l'Inde* (Paris, 1948).

M. SELIGSON, *Diwan de Tarafa* (Paris, 1901).

B. SPULER, *Handbuch der Orientalistik, Semistik* (Leiden 1964).

— *Handbuch der Orientalistik, Iranistik, Literatur* (Leiden 1968).

C. A. STOREY, *Persian Literature: A bio-bibliographical Survey* (London, 1927–50) 3 vols.

TABARI, *Chronique*, translation from the Persian by H. Zotenberg (Paris, 1867–74), 4 vols.

TANUKHI, *The Table-Talk of a Mesopotamian Judge*, trans. D. S. Margoliouth (London, 1922).

V. THILO, *Die Ortsnamen in der alterarabischen Poesie* (Wiesbaden, 1958).
 A. TRABULSI, *La critique poétique des Arabes* (Damascus, 1956).
 J. VERNET, *Literatura araba* (Barcelona, 1966).
 E. WAGNER, *Abu Nuwas* (Wiesbaden, 1965).
 —, *Der Diwan des Abu Nuwas* (Wiesbaden, 1958).
 G. WIET, *Introduction à l'histoire de la littérature arabe* (Paris, 1966).
 WESTENFELD, *Die Geschichtschreiber der Araber und ihre Werke* (Göttingen, 1882).
 YA'QUEI, *Les Pays*, trans. G. Wiet (Cairo, 1937).

X. ARTISTIC EXPRESSION, ARTS AND CRAFTS

P. ACKERMAN, *Guide to the Exhibition of Persian Art* (New York, 1940).
 AHLENSTIEL-ENGEL, *Arabische Kunst* (Breslau, 1923).
 AMADOR DE LOS RIOS, *Inscripciones árabes de Córdoba* (Madrid, 1880).
 M. AMARI, *Le epigrafi arabiche di Sicilia* (Palermo, 1879–85).
 ANDRAE, *Hatra* (Leipzig, 1908–12).
 G. V. ARATA, *L'Architettura arabo-normanna in Sicilia* (Milan, 1914).
 SIR THOMAS ARNOLD, *Painting in Islam* (Oxford, 1928); 2nd ed. (New York, 1965).
 —, *The Old and New Testament in Muslim Religious Art* (London, 1932).
Les Arts de l'Iran. L'ancienne Perse et Bagdad. Catalogue de l'Exposition de la Bibliothèque nationale (Paris, 1938).
 W. BACHMANN, *Kirchen und Moscheen in Armenien und Kurdistan* (Leipzig, 1913).
 A. BAHGAT and A. GABRIEL, *Fouilles d'al-Foustat* (Paris, 1921).
 — and F. MASSOUL, *La céramique musulmane de l'Egypte* (Cairo, 1930).
 M. BAHRAMI, *Gorgan Faïences* (Cairo, 1949).
 —, *Recherches sur les carreaux de revêtement lustré dans la Céramique persane du XIII^e au XVe siècle* (Paris, 1937).
 BALTRUSAITIS, *Etudes sur l'art médiéval en Géorgie et en Arménie* (Paris, 1929).
 D. BARRETT, *Islamic Metalwork in the British Museum* (London, 1949).
 H. BASSET and H. TERRASSE, *Sanctuaires et forteresses almohades* (Rabat, 1932).
 G. L. BELL, *Amurath to Amurath* (London, 1911).
 —, *Palace and Mosque at Ukhaidir* (Oxford, 1914).
 M. VAN BERCHEM, *Inschriften aux Armenien*, selection from C. F. Lehmann-Haupt, *Materialien zur älteren Geschichte Armeniens und Mesopotamiens* (Göttingen).
 —, *Inscriptions arabes de Syrie. Mémoires de l'Institut égyptien* (Cairo, 1897).
 —, *Matériaux pour un Corpus inscriptionum arabicarum, Egypte*, bk I (Paris, 1903).
 —, *Matériaux pour un Corpus inscriptionum arabicarum, Jérusalem* (Cairo, 1922–49), 3 vols.

M. VAN BERCHEM and E. FATIO, *Voyage en Syrie* (Cairo, 1914–5), 2 vols.

M. VAN BERCHEM and HALIL EDHEM, *Matériaux pour un Corpus inscriptionum arabicarum. Asie mineure* (Cairo, 1910–7), 2 vols.

M. VAN BERCHEM and STRZYGOWSKI, *Amida* (Heidelberg, 1910).

L. DE BEYLIE, *La Kalaa des Beni Hammad* (1909).

E. BLOCHET, *Les enluminures des manuscrits orientaux, turcs, arabes, persans de la Bibliothèque nationale* (Paris, 1926).

—, *Les peintures des manuscrits orientaux de la Bibliothèque nationale* (Paris, 1920).

J. BOURGOIN, *Les Arts arabes* (Paris, 1873).

—, *Les Éléments de l'art arabe* (Paris, 1879).

—, *Précis de l'art arabe* (Paris, 1892).

P. DU BOURGUET, *L'Art copte* (Paris, 1964).

—, *L'Art copte* (Paris, 1967).

—, *Musée national du Louvre. Catalogue des Etoffes coptes* (Paris, 1964).

BOURRILLY and LAOUST, *Stèles funéraires marocaines* (Paris, 1927).

D. BRANDEBURG, *Islamische Baukunst in Aegypten* (Berlin, 1966).

L. BREHIER, *L'Art en France des invasions barbares à l'époque romane* (Paris, 1930).

M. S. BRIGGS, *Muhammedan Architecture in Egypt and Palestine* (Oxford, 1924).

K. BRISCH, *Die Fenstergitter und verwandte Ornamente der Hauptmoschee von Cordoba* (Berlin, 1966).

N. P. BRITTON, *A Study of Some Early Islamic Textiles in the Museum of Fine Arts of Boston* (Boston, 1938).

R. E. BRUENNEN and A. VON DOMASZEWSKI, *Die Provincia Arabia* (Strasbourg, 1904–9), 3 vols.

A. J. BUTLER, *Islamic Pottery* (London, 1926).

J. CAILLE, *La mosquée de Hassan à Rabat* (Paris, 1954).

CALVERT, *Moorish Remains in Spain* (London, 1906).

—, *Spain. An Historical and Descriptive Account of its Architecture, Landscape and Arts* (London, 1904).

P. CASANOVA, *Essai de reconstitution topographique de la ville d'al-Foustat* (Cairo, 1916–9).

—, *Histoire et description de la Citadelle du Caire* (Paris, 1897).

Catalogue of the International Exhibition of Persian Art at the Royal Academy of Arts (London, 1931).

Céramique (La) égyptienne de l'époque musulmane (Basle, 1922).

M. CLERGET, *Le Caire* (Cairo, 1934), 2 vols.

COHN-WIENER, *Asia* (Berlin, 1929).

—, *Das Kunstgewerbe des Ostens* (Berlin).

—, *Turan Islamische Baukunst in Mittelasien* (Berlin, 1938).

P. COSTE, *Architecture arabe ou monuments du Caire* (Paris, 1837–9).

—, *Monuments modernes de la Perse* (Paris, 1867).

K. A. C. CRESWELL, *A Bibliography of the Architecture, Arts and Crafts of Islam* (Cairo, 1961).

—, *A Short Account of Early Muslim Architecture* (Harmondsworth, 1958).

—, *Early Muslim Architecture* (Oxford, 1932–40), 2 vols.

—, *Muslim Architecture of Egypt* (Oxford, 1952–60), 2 vols.

J. DAVID-WEILL, *Les bois sculptés à épigraphes jusqu'à l'époque mamouke* (Cairo, 1931).

R. H. C. DAVIS, *The Mosques of Cairo* (Cairo, 1944).

DESCHAMPS, *Le crac des chevaliers* (Paris, 1934).

G. DEVERDUN, *Marrakech* (Rabat, 1959).

R. H. L. DEVONSHIRE, *L'Egypte musulmane et les fondateurs de ses monuments* (Paris, 1926).

—, *Quatre-vingts mosquées et autres monuments musulmans du Caire* (Cairo, 1925); English ed. (Cairo, 1930).

—, *Quelques influences islamiques sur les arts de l'Europe* (Cairo, 1935).

—, *Rambles in Cairo* (Cairo, 1917); 2nd ed. (1931).

—, *Some Cairo Mosques and their Founders* (London, 1921).

DIEULAFOY, *Espagne et Portugal* (Paris, 1921).

E. DIEZ, *Churasanische Baudenkmäler* (Berlin, 1918).

—, *Die Kunst der islamischen Völker* (Berlin, 1922); 2nd ed. (Potsdam, 1928).

—, *Persien, Islamische Baukunst in Churasan* (Hagen, 1925).

M. S. DIMAND, *A Handbook of Mohammedan decorative Arts* (New York, 1930); 2nd ed. (1944).

DJEMAL PASHA, *Alte Denkmäler aus Syrien, Palestina und Westarabien* (Berlin, 1918).

M. ECOCHARD and C. LE COEUR, *Les Bains de Damas, monographies architecturales* (Beirut, 1942–3), 2 vols.

K. ERDMANN, *Die Kunst Irans zur Zeit der Sasaniden* (Berlin, 1943).

R. D'ERLANGER, *La musique arabe* (Paris, 1935), 2 vols.

E. ESIN, *La Mecque, ville bénie; Médine, ville radieuse* (Paris, 1963).

R. ETTINGHAUSEN, *La peinture arabe* (Paris, 1962).

—, *Studies in Muslim Iconography. The Unicorns* (Washington, 1950).

E. ETTINGHAUSEN and E. SCHROEDER, *Iranian and Islamic Art* (Newton, 1944).

Exposition d'Art musulman (Alexandria, 1925).

V. FAGO, *L'arte araba nelle Siria e in Egitto* (Rome, 1909).

VON FALKE, *Decorative Silks* (Berlin and London, 1922).

—, *Kunstgeschichte der Seidenweberei* (Berlin, 1913).

B. FARÈS, *Essai sur l'Esprit de la Décoration islamique* (Cairo, 1952).

—, *Le Livre de la thériaque, manuscrit arabe à peintures* (Cairo, 1953).

—, *Une miniature religieuse de l'Ecole arabe de Bagdad* (Cairo, 1942).

—, *Vision chrétienne et signes musulmans* (Cairo, 1961).

H. G. FARMER, *Al-Farabi's Arabic-Latin Writings on Music* (Glasgow, 1935).

—, *The Sources of Arabian Music, an Annotated Bibliography of Arabic Manuscripts Which Deal With the Theory, Practice and History of Arabian Music From the Eighth to the Seventeenth Century* (Leiden, 1965).

A. FATTAL, *La mosquée d'Ibn Touloun au Caire* (Beirut, 1960).

J. FERRANDIS, *Marfiles y azabaches españolas* (Madrid, 1928).

A. FIKRY, *La Grande Mosquée de Kairouan* (Paris, 1934).

—, *L'art roman du Puy et les influences islamiques* (Paris, 1934).

S. FLURY, *Die Ornamente der Hakim und Azhar Moschee* (Heidelberg, 1912).

—, *Islamische Schriftbänder* (Basle-Paris, 1920).

—, *Le décor épigraphique des monuments de Ghazna* (Syria, 1925).

D. FOUQUET, *Contribution à l'étude de la céramique orientale* (Cairo, 1900).

FRANZ PASCHA, *Die Baukunst des Islam* (Darmstadt, 1896).

A. GABRIEL, *Monuments turcs d'Anatolie* (Paris, 1931-4), 2 vols.

—, *Une capitale turque: Brousse* (Paris, 1959).

—, *Voyages archéologiques dans la Turquie orientale* (Paris, 1940).

GABRIEL-ROUSSEAU, *L'art décoratif musulman* (Paris, 1934).

J.-C. GARDIN, *Lashkari Bazar II. Les trouvailles: Céramiques et monnaies de Lashkari Bazar et de Bust* (Paris 1965).

A. GAYET, *L'Art arabe* (Paris, 1893).

K. O. GHALEB, *Le Mikyas ou Nilomètre de l'Ile de Rodah* (Cairo, 1951).

R. GHIRSHMAN and G. WIET, *7000 ans d'art en Iran* (Paris, 1961).

GIRIAULT DE PRANGEY, *Essai sur l'architecture des Arabes et des Mores, en Espagne, en Sicile et en Barbarie* (Paris, 1841).

—, *Monuments arabes et moresques d'Espagne* (Paris, 1839).

H. GLUECK, *Islamisches Kunstgewerbe*, in H. T. Bossert, *Geschichte des Kunstgewerbes aller Zeiten und Völker* (Berlin).

H. GLUECK and E. DIEZ, *Die Kunst des Islam* (Berlin, 1925).

A. GODARD, *L'art de l'Iran* (Paris, 1962).

L. GOLVIN, *La mosquée* (Algiers, 1960).

—, *Recherches archéologiques à la Qal'a des Banu Hammad* (Paris, 1965).

A. GRABAR, *L'iconoclasme byzantin* (Paris, 1957).

O. GRABAR, *Persian Art Before and After the Mongol Conquest* (Ann Arbor, 1959).

R. GROUSSET, *Les civilisations de l'Orient*; Bk I, *l'Orient* (Paris, 1929).

R. W. HAMILTON *Khirbat al Mafjar. An Arabian Mansion in the Jordan Valley* (Oxford, 1959).

—, *The Structural History of the Aqsa Mosque* (London, 1949).

S. HASSID, *The Sultan's Turrets* (Cairo, 1939).

L. HAUTECOEUR and G. WIET, *Les mosquées du Caire* (Paris, 1932), 2 vols.

H. HAWARY and H. RACHED, *Stèles funéraires. Catalogue général du Musée arabe*, bks I and III (Cairo, 1932-8).

L. D'HENNEZEL, *Musée historique des tissus. Catalogue des principales pièces exposées* (Lyons, 1929).

D'HENNEZEL, *Pour comprendre les tissus d'art* (Paris, 1930).

F. HERNANDEZ, *La Techumbre de la Gran Mezquita de Cordoba* (Madrid, 1928).

M. HERZ BEY, *Catalogue du Musée national de l'art arabe* (Cairo, 1907).

HERZ-PASCHA, *Die Baugruppe des Sultans Qalaun in Kairo* (Hamburg, 1919).

E. HERZFELD, *Die Asugrabungen aus Samarra*, with the collaboration of Lamm and Sarre (Berlin, 1925-8), 4 vols.

—, *Matériaux pour un Corpus inscriptionum arabicarum, Syrie du Nord, Monuments et inscriptions d'Alep* (Cairo, 1954-5), 3 vols.

D. HILL and O. GRABAR, *Islamic Architecture and its Decoration A.D. 800-1500* (London, 1964).

R. L. HOBSON, *British Museum. A Guide to the Island Pottery of the Near East* (London, 1932).

O. HOEVER, *Kulthauten des Islams* (Leipzig, 1922).

C. HUART, *Epigraphie arabe d'Asie mineure* (Paris, 1895).

Illustrated Souvenir of the Exhibition of Persian Art (London, 1931).

JACOBSTAAL, *Mittelalterliche Backsteinbauten zu Nachtshevan in Araxes Thale* (Berlin, 1899).

JAUSSEN and SAVIGNAC, *Les châteaux arabes de Qeseir Amra, Haraneh et Tuba* (Paris, 1922).

—, *Mission archéologique en Arabie* (Paris, 1909-14), 4 vols.

J. VON KARABACEK, *Die persische Nadelmalerei Susandschird* (Leipzig, 1881).

KELEKIAN. *The Kelekian Collection of Persian and analogous Potteries* (Paris, 1910).

—, *The Potteries of Persia* (Paris, 1909).

A. F. KENDRICK, *Catalogue of Muhammadan Textiles of the Medieval Period* (London 1924).

R. KOECHLIN, *Les Céramiques musulmanes de Suse* (Paris, 1928).

R. KOECHLIN and G. MIGEON, *Cent planches en couleurs d'art musulman* (Paris, 1928).

KOHLHAUSEN, *Islamische Kleinkunst* (Hamburg, 1930).

E. KUEHNEL (Festschrift), *Aus der Welt der islamischen Kunst* (Berlin, 1959).

—, *Die islamische Kunst*, selection of Anton Springer, *Handbuch der Kunstgeschichte*, bk VI (Leipzig, 1929).

—, *Die Kunst des Islam* (Stuttgart, 1962).

—, *Die Moschee. Bedeutung, Einrichtung und kunsthistorische Entwicklung der islamische Kultstätte* (Berlin, 1949).

—, *Die Sammlung Türkischer und islamischer Kunst im Tschinili Köschk* (Berlin and Leipzig, 1938).

—, *Islamische Kleinkunst* (Berlin, 1925).

—, *Islamische Stoffe au aegyptischen Gräbern* (Berlin, 1927).

—, *Miniaturmalerei im islamischen Orient* (Berlin, 1922).

—, *Maurische Kunst* (Berlin, 1924).

E. KUEHNEL and L. BELLINGER, *The Textile Museum, Catalogue of Dated Tiraz Fabrics* (Washington, 1952).

E. LAMBERT, *Art musulman et art chrétien dans la Péninsule ibérique* (Paris, 1958).

C. J. LAMM, *Cotton in medieval textiles of the near East* (Paris, 1937).

—, *Mittelalterliche Gläser und Steinschnittarbeiten aus dem nahen Osten* (Berlin, 1930), 2 vols.

A. LANE, *Early Islamic Pottery* (London, 1947).

S. LANE-POOLE, *The Art of the Saracens in Egypt* (London, 1886).

A. LEZINE, *Le ribat de Sousse, suivi de notes sur le ribat de Monastir* (Tunis, 1956).

—, *Mahdiya. Recherches d'archéologie islamique* (Paris, 1965).

—, *Sousse* (Tunis, 1968).

LONGHURST, *Catalogue of Carvings in Ivory* (London, 1927–9).

J. H. LÖYTVED, *Konia* (Berlin, 1907).

MAHMUD AHMAD, *Guide des principaux Monuments arabes du Caire* (Cairo, 1939).

G. MARÇAIS, *Album de pierre, plâtre et bois sculptés* (Algiers, 1909).

—, *Coupoles et plafonds de la Grande Mosquée de Kairouan* (Tunis, 1925).

—, *L'architecture musulmane d'Occident* (Paris, 1954).

—, *L'art de l'islam* (Paris, 1946); 2nd ed. (Paris, 1962).

—, *Les faïences à reflects métalliques de la Grande Mosquée de Kairouan* (Paris, 1928).

—, *Les Poteries et faïences de la Qal'a des Beni Hammad* (Constantine, 1913).

—, *L'Exposition d'Art musulman d'Alger* (Paris, 1906).

—, *Manuel d'art musulman. L'architecture, Tunisie, Algérie, Maroc, Espagne, Sicile* (Paris, 1926–7), 2 vols.

—, *Tunis et Kairouan* (Paris, 1937).

G. MARÇAIS and L. GOLVIN, *La grande mosquée de Sfax* (Tunis, 1960).

G. MARÇAIS, L. POINSSOT and L. GAILLARD, *Objets Kairouanais, IXe au XIIIe siècle* (Tunis, 1952).

w. and G. MARÇAIS, *Les monuments arabes de Tlemcan* (Paris, 1903).

A. MARICQ and G. WIET, *Le minaret de Djam* (Paris, 1959).

F. R. MARTIN, *Aeltere Kupferarbeiten aus dem Orient* (Stockholm, 1902).

MASKEL, *Ivories* (London, 1905).

B. MASLOW, *Les mosquées de Fès et du Nord du Maroc* (Paris, 1937).

L. MASSIGNON, *Les méthodes de réalisation artistique des peuples de l'Islam, in Syria* (Paris, 1921).

—, *Mission en Mésopotamie* (Cairo, 1910–2), 2 vols.

L. A. MAYER, *Annual Bibliography of Islamic Art and Archaeology* (Jerusalem, 1937–9).

—, *Islamic Architects and their Works* (Geneva, 1956).

—, *Islamic Astrolabists and their Works* (Geneva, 1956).

—, *Islamic Metalworkers and their Works* (Geneva, 1959).

—, *Islamic Woodcarvers and their Works* (Geneva, 1959).

—, *L'art juif en terre de l'Islam* (Geneva, 1959).

L. A. MAYER and J. PINKERFELD, *Some Principal Muslim Religious Building in Israel* (Jerusalem, 1950).

MEHREN, *Cahirah og Kerafat* (Copenhagen, 1878).

J. MEUNIÉ and H. TERRASSE, *Recherches archéologiques à Marrakech* (Paris, 1952).

— — —, *Nouvelles recherches archéologiques à Marrakech* (Paris, 1957).

R. MEYER-RIEFSTAHL, *The Parish-Watson Collection of Mohammedan Potteries* (New York, 1922).

G. MIGEON, *Exposition des Arts musulmans* (Paris, 1903).

— — —, *Le Caire, le Nil et Memphis* (Paris, 1906).

— — —, *Les arts du tissu* (Paris, 1909).

— — —, *Les Arts musulmans* (Paris, 1926).

— — —, *Manuel d'art musulman. Les arts plastiques et industriels* (Paris, 1907); 2nd ed. (Paris, 1927), 2 vols.

— — —, *Musée du Louvre.—Armes, sculptures, bois, ivoires, bronzes et cuivres.—Cristaux de roche, verres émaillés et céramiques* (Paris, 1922), 2 vols.

U. MONNERET DE VILLARD, *Description générale du monastère de Saint Siméon à Aswan* (Milan, 1927).

— — —, *Deyr el-Muharraqah* (Milan, 1928).

— — —, *Il monasterio di S. Simeone presso Aswan* (Milan, 1927).

— — —, *Introduzione allo studio dell'archeologia islamica* (Venice, 1966).

— — —, *La Nubia mediovale* (Cairo, 1935).

— — —, *La necropoli musulmana di Aswan* (Cairo, 1930).

— — —, *L'arte iranica* (Milan, 1954).

— — —, *La scultura ad Ahnas* (Milan, 1923).

— — —, *Le pitture musulmane al Soffitto della Capella Palatina in Palermo* (Rome, 1950).

— — —, *Les couvents près de Sohag* (Milan, 1925–6), 2 vols.

— — —, *Les églises du monastère des Syriens au Wadi an-Natrūn* (Milan, 1928).

— — —, *Mostra d'Arte iranica* (Milan, 1956).

G. L. MUNTHE, *Islam Konst* (Stockholm, 1929).

MUSIL, *Kusejr Amra* (Vienna, 1907).

De la NEIZIÈRE, *Les monuments mauresques du Maroc* (Paris, 1922–3).

J. OLMER, *Les filtres de gargoulettes de l'Egypte musulmane* (Cairo, 1932).

M. von OPPELHEIM, *Vom Mittelmeer zum Persischen Golf* (Berlin, 1899–1900), 2 vols.

ORBELI and TREVER, *Orfèvrerie sassanide* (Leningrad, 1935).

J. A. PAGE, *An Historical Memoir on the Kutb: Delhi* (Calcutta, 1926).

A. PATRICOLO and U. MONNERET DE VILLARD, *La Chiesa di Santa Barbara al-Vecchio Cairo* (Florence, 1922).

E. PAUTY, *Bois sculptés d'églises coptes* (Cairo, 1930).

— — —, *La mosquée d'Ibn Touloun et ses alentours* (Cairo).

— — —, *Les bois sculptés jusqu'à l'époque ayyoubide* (Cairo, 1931).

— — —, *Les hammams du Caire* (Cairo, 1933).

M. PEZARD, *La céramique archaïque de l'islam et ses origines* (Paris, 1920), 2 vols.

R. PFISTER, *Les toiles imprimées de Fostat et l'Hindoustan* (Paris, 1938).

—, *Nouveaux textiles de Palmyre* (Paris, 1937).

—, *Textiles de Palmyre* (Paris, 1930).

J. PILJEAN, *Arte Islamica* (Lisbon, 1948).

R. PINDER-WILSON, *Islamic Art* (London, 1957).

G. PLOIX DE ROTROU, *La Citadelle d'Alep et ses environs* (Aleppo, 1930).

A. U. POPE, *An Introduction to Persian Art* (London, 1930).

—, *Masterpieces of Persian Art* (New York, 1945).

—, *Persian Architecture. The Triumph of Form and Colour* (New York, 1965).

W. POPPER, *The Cairo Nilometer* (Berkeley and Los Angeles, 1951).

K. PREUSSER, *Nordmesopotamische Baudenkmäler* (Leipzig, 1911).

PRISSE D'AVESNES, *La décoration arabe* (Paris, 1885).

—, *L'art arabe d'après les monuments du Kaire* (Paris, 1873).

P. RAVAISSE, *Essai sur l'Histoire et la topographie du Caire* (Paris, 1886–9).

N. A. REATH and E. G. SACHS, *Persian textiles* (New Haven, 1937).

Répertoire chronologique d'épigraphie arabe (Cairo, 1931–44), thirteen volumes covering the present work.

O. REUTHER, *Ocheidir* (Leipzig, 1912).

RIANO, *Industrial Arts in Spain* (London, 1879).

P. RICARD, *Pour comprendre l'art musulman dans l'Afrique du Nord et en Espagne* (Paris, 1924).

D. S. RICE, *Le Baptistère de Saint Louis* (Paris, 1950).

—, *Medieval Harran* (Liverpool-London, 1952).

—, *The Wade Cup in the Cleveland Museum of Art* (Paris, 1955).

—, *Islamic Art* (London, 1965).

E. T. RICHMOND, *The Dome of the Rock in Jerusalem* (Oxford, 1934).

—, *Moslem Architecture* (London, 1926).

RIEFSTAHL, *Turkish Architecture in South-western Anatolia* (Cambridge, 1931).

H. RIVIÈRE, *La céramique dans l'art musulman* (Paris, 1913).

RIVOIRÀ, *Architettura musulmana* (Milan, 1914).

J. ROSINTAL, *Pendentifs, trompes et stalactites dans l'architecture orientale* (Paris, 1928).

Sir Denison ROSS, *The Art of Egypt Through the Ages* (London, 1931).

—, and other collaborators, *Persian Art* (London, 1930).

B. ROY and P. POINSSOT, *Inscriptions arabes de Kairouan* (Tunis, 1950–8), 2 vols.

M. RUMPLER, *La coupole dans l'architecture byzantine et musulmane* (Strasbourg, 1956).

H. SALADIN, *La mosquée de Sidi Okba à Kairouan* (Paris, 1905).

—, *Manuel d'art musulman* (Paris, 1907).

SALLES and BALLOT, *Les collections de l'Orient musulman* (Paris, 1928).

G. SALMON, *Etudes sur la topographie du Caire* (Cairo, 1902).

F. SARRE, *Denkmäler persischen Baukunst* (Berlin, 1910).

—, *Die Kunst des alten Persien* (Berlin, 1922).

—, *Kiosk von Konia* (Berlin, 1936).

—, *Seldschukische Kunst* (Leipzig, 1909).

F. SARRE and E. HERZFELD, *Archäologische Reise im Euphrat- und Tigris-Gebiet* (Berlin, 1911–20), 3 vols.

F. SARRE and MARTIN, *Die Ausstellung von Meisterwerken muhammedanischer Kunst in München* (Munich, 1910), 4 vols.

F. SARRE and E. MITTWOCH, *Sammlung F. Sarre: Metal* (Leipzig, 1906).

J. SAUVAGET, *Alep. Essai sur le développement d'une grande ville syrienne, des origines au milieu de XIXe siècle* (Paris, 1943).

J. SAUVAGET, *Les monuments historiques de Damas* (Beirut, 1932).

J. SAUVAGET and J. SOURDEL-THOMINE, *Les monuments ayyoubides de Damas* (Paris, 1928–50), 4 numbers.

P. SCHWARZ, *Die Abbasiden-Residenz, Samarra* (Berlin, 1909).

P. SEBAG, *Kairouan* (Paris, 1963).

M. SIMAIKA PACHA, *Guide sommaire du Musée copte* (Cairo, 1937); English trans. G. H. Costigan (1938).

SMIRNOF, *Atlas d'argenterie orientale* (St Petersburg, 1909).

M. SOBERNHEIM, *Matériaux pour un Corpus inscriptionum arabicarum, Syrie du Nord* (Cairo).

J. STRZYGOWSKI, *Altai-Iran und Völkerwanderung* (Leipzig, 1917).

—, *Asiens Bildende Kunst* (Augsburg, 1930).

Survey of Persian Art (Oxford, 1938–9), 6 vols.

U. TARCHI, *L'achittetura e l'arte musulmana in Egitto* (Turin, 1922).

TATE, *Seistan: a Memoir on the History, Topography, Ruins, and People of the Country* (Calcutta, 1910–2), 2 vols.

H. TERRASSE, *La grande mosquée de Taza* (Paris, 1943).

—, *La mosquée des Andalous à Fès* (Paris, 1942).

—, *L'art hispano-mauresque* (Paris, 1932).

—, *Maroc. Villes impériales* (Grenoble, 1937).

THIERSCH, *Pharos, Antike, Islam und Occident* (Leipzig and Berlin, 1909).

L. TORRES BALBAS, *Ciudades yermas hispanomusulmanas* (Madrid, 1957).

—, *La mezquita de Cordoba y las ruinas de Madina al-Zahra* (Madrid, 1952).

VELASQUEZ BOSCO, *Medina Azzahra y Almiriyah* (Madrid, 1912).

Victoria and Albert Museum. 100 Masterpieces of Mohammedan and Oriental Art (London, 1931).

VINCENT and MACKAY, *Hébron; Le Haram al-Khalil* (Paris, 1923).

M. de VOGUE, *Le temple de Jérusalem* (Paris, 1864).

VOLLBACH and E. KUEHNEL, *Late Antique Coptic and Islamic Textiles* (London, 1920).

WALLIS, *Persian Ceramic Art.—The Thirteenth-Century Lustred Vases* (London, 1891).

—, *Persian Ceramic Art.—The Thirteenth-Century Lustred Wall-Tiles* (London, 1894).

WHISHAW, *Arabic Spain, Sidelights on her History and Art* (London, 1912).

M. WIASTIMINA and V. KRATSCHOVSKA, *L'Art des pays de l'Islam* (Kiev, 1930).

G. WIET, *Album du Musée arabe* (Cairo, 1930).

—, *Exposition d'art musulman, Février-mars 1947* (Cairo, 1947).

—, *Exposition d'art persan, Catalogue et Album* (Cairo, 1935).

—, *Exposition des tapisseries et tissus du Musée arabe* (Paris, 1935).

—, *L'épigraphie arabe de l'Exposition d'art persan du Caire* (Cairo, 1935).

—, *Les mosquées du Caire* (Paris, 1966).

—, *Les objets mobiliers en cuivre et en bronze à inscriptions historiques* (Cairo, 1932).

—, *L'Exposition persane de 1931* (Cairo, 1933).

—, *Matériaux pour un Corpus inscriptionum arabicarum, Egypte*, bk II, (Cairo, 1930).

—, *Musée national de l'art arabe. Guide sommaire* (Cairo, 1939).

—, *Soieries persanes* (Cairo, 1948).

—, *Stèles funéraires. Catalogue général du Musée arabe*, bks II, IV-X (Cairo, 1936-42), 8 vols.

WILLIAMS, *Arts and Crafts of Older Spain* (London, 1907).

K. WULZINGER and C. WATZINGER, *Damaskus. Die islamische Stadt* (Berlin, 1924).

WULZINGER, WITTEK and SARRE, *Das islamische Milet* (Berlin and Leipzig, 1935).

H. ZALOSCER, *Quelques considérations sur les rapports entre l'art copte et les Indes* (Cairo, 1947).

—, *Une collection de pierres sculptées au Musée copte du Vieux-Caire* (Cairo, 1948).

S. M. ZBISS, *Corpus des Inscriptions arabes de Tunisie, Inscriptions de Tunis* (Tunis, 1955).

—, *Inscriptions du Gorjani. Contribution à l'histoire des Almohades et des Hafssides* (Tunis, 1962).

—, *Inscriptions de Monastir* (Tunis, 1960).

C. EUROPE AND BYZANTIUM

I. GENERAL

I. Europe, general

HERMANN AUBIN, *Von Altertum zum Mittelalter* (Munich, 1949).

MARC BLOCH, 'Les invasions', *Annales d'histoire sociale*, I (1945), 33-46; II (1945), 13-28.

WOLFGANG BRAUNFELS et al., *Karl der Grosse: Lebenswerk und Nachleben* (Düsseldorf, 1965-7), 4 vols.

Cambridge Economic History of Europe (Cambridge, 1941-63), vols I-III.

PIERRE COURCELLE, *Histoire littéraire des grandes invasions germaniques* (Paris, 1948).

—, *Les lettres grecques en Occident de Macrobe à Cassidore* (Paris, 1943).

CHRISTOPHER DAWSON, *The Making of Europe* (London, 1932).

HEINRICH FICHTENAU, *Das karolingische Imperium* (Zürich, 1949).

JACQUES FONTAINE, *Isidore de Séville et la culture classique dans l'Espagne wisigothique* (Paris, 1959), 2 vols.

JACQUES LE GOFF, *La civilisation de l'Occident médiéval* (Paris, 1964).

W. LEVINSON, *England and the Continent in the Eighth Century* (Oxford, 1946).

ROBERT S. LOPEZ, *Naissance de l'Europe, Ve-XIVe siècles* (Paris, 1962).

FERDINAND LOT, *La fin du monde antique et le début du Moyen Age* (Paris, 1927).

ANDRÉ LOYEN, *Sidoine Apollinaire et l'esprit précieux en Gaule aux derniers jours de l'Empire* (Paris, 1943).

LUCIEN MUSSET, *Les invasions: les vagues germaniques* (Paris, 1965).

J. R. PALANQUE et al., *Le Christianisme et l'Occident barbare* (Paris, 1945).

EDOUARD PERROY et al. *Histoire générale des civilisations*, vol. III, *Le Moyen Age* (Paris, 1955).

HENRI PIRENNE, *Histoire de l'Europe des invasions au XVIe siècle* (Paris–Brussels, 1936).

—, *Histoire économique et sociale du Moyen Age*, new ed. by H. Van Werveke (Paris, 1963).

BERTHOLD RUBIN, *Das Zeitalter Justinians*, vol. I (Berlin, 1960).

EDOUARD SALIN, *La civilisation mérovingienne* (Paris, 1945).

LUDWIG SCHMIDT, *Geschichte der deutschen Stämme bis zum Ausgang der Völkerwanderung*, I. *Die Ostgermanen* (2nd ed., Munich, 1941); II. *Die Westgermanen* (2nd ed., 1938–40), 2 vols.

A. HAMILTON THOMPSON, *Bede, his Life, Times and Writings* (Oxford, 1935).

PHILIPPE WOLFF and FRED. MAURO, *Histoire générale du travail*, II, *L'âge de l'artisanat* (Paris, 1960).

—, *The Awakening of Europe* (London, 1968).

2. Western and Central Europe, by countries

HENRI PIRENNE, *Histoire de la Belgique*, vols I and II (Brussels, 1909–12). *Oxford History of England*, vols II–IV (Oxford, 1947–55).

ERNEST LAVISSE, ed., *Histoire de France depuis les origines jusqu'à la Révolution* (Paris, 1901–3), vol. II (1) to III (2).

GEORGES DUBY and ROBERT MANDROU, *Histoire de la civilisation française*, vol. I (Paris, 1958).

B. GEBHARDT, *Handbuch der deutschen Geschichte*, vol. I (Stuttgart, 1930; 8th ed., ed by Robert Holtzmann, 1954).

L. LÜTGE, *Deutsche Sozial- und Wirtschaftsgeschichte* (2nd ed., Berlin, 1960).

LUIGI SALVATORELLI, *Storia d'Italia illustrata*, vols III and IV.

GINO LUZZATTO, *Storia economia d'Italia*, vol. I (Rome, 1949).
 RAMÓN MENÉNDEZ PIDAL, *Historia de España*, vols III-VI (Madrid, 1940-55).
 JAIME VICENS VIVES, *Historia social y económica de España y América*, vols I and II (Barcelona, 1957).

3. Northern and Eastern Europe

J. BRØNSTED, *The Vikings* (London 1960).
 LUCIEN MUSSET, *Les peuples scandinaves au Moyen Age* (Paris 1951).

4. The Slavs and Russia

FRANCIS DVORNIK, *The Slavs: Their Early History and Civilization* (Boston, 1956).
 B. A. GREKOV ed., *Otcherki Istorii SSSR*, vol. I (Moscow, 1953).
 BASILE KLUTCHEVSKIJ, *Histoire de la Russie*, trans. (Paris, 1956).
 ROGER PORTAL, *Les Slaves, peuples et nations (VIIIe—XXe siècles)* (Paris, 1965).
 P. N. TRETJAKOV, *Vostočnoslavjanskie plemena* (Moscow, 1953).
 G. VERNADSKI, *Essai sur les origines russes*, trans. (Paris, 1959), 2 vols.
 —, *A History of Russia*, Vols I and II (New Haven, Conn., 1943-).
 PAUL LEMERLE, 'Invasions et migrations dans les Balkans depuis la fin de l'époque romaine jusqu'au VIIIe siècle', *Revue Historique*, 211 (1954), 265-308.
 VESELIN BEŠEVLIĆ and JOHANNES IRMSCHER, eds., *Antike und Mittelalter in Bulgarien* (Berlin, 1960).
 BALINT HOMAN, *Geschichte des ungarischen Mittelalters* (Berlin, 1940-53), 2 vols.
 J. V. POLISENSKI, *History of Czechoslovakia in Outline* (Prague, 1948).
 ZYGMUNT WOJCIECHOWSKI, *L'état polonais au Moyen Age, Histoire des institutions* (Paris, 1949).

5. Byzantium

LOUIS BRÉHIER, *Le monde byzantin*, I, *Vie et mort de Byzance*; II, *Les institutions de l'Empire Byzantin*, III, *La civilisation byzantine* (Paris, 1947-50), 3 vols.
 PAUL GOUBERT, *Byzance avant l'Islam* (Paris, 1952-65), 3 vols.
 ANDRÉ GRABAR, *L'iconoclasme byzantin: dossier archéologique* (Paris, 1958).
 J. M. HUSSEY, *The Cambridge Medieval History*, vol. IV, *The Byzantine Empire* (Cambridge, 1964-7), 2 vols.
 E. J. MARTIN, *A History of the Iconoclast Controversy* (London, 1931).
 GEORG OSTROGORSKIJ, *Geschichte des byzantinischen Staates* (2nd ed., Munich, 1952).

—, *Studien zur Geschichte des byzantinischen Bilderstreites* (Breslau, 1929).
 A. A. VASILIEV, *History of the Byzantine Empire* (Madison, 1928–9), 2 vols.

6. Culture Contacts

STURE BOLIN, 'Mohammed, Charlemagne and Ruric', *Scandinavian Economic History Review* (1953), 5–39.
 ARCHIBALD R. LEWIS, *Naval Power and Trade in the Mediterranean, A.D. 500–1100* (Princeton, 1951).
 MAURICE LOMBARD, 'L'or musulman du VIIe au XIe siècle', *Annales E.S.C.* (1947), 143–60.
 ROBERT S. LOPEZ, 'East and West in the Early Middle Ages: Economic Relations', 10th International Congress of Historical Sciences, Rome, 1955, *Relazioni*, III, 113–63.
 HENRI PIRENNE, *Mahomet et Charlemagne* (Paris, Brussels, 1937) and Robert S. Lopez, 'Mohammed and Charlemagne: A Revision', *Speculum* (1943), 14–38.

II. THE FORMATION OF THE STATE, ECONOMIC AND SOCIAL DEVELOPMENT, POPULATION

I. General

ROBERT H. BAUTIER, 'Les foires de Champagne, recherches sur une évolution historique', *Société Jean Bodin* (1953), vol. V, *La foire*, 97–145.
 MARC BLOCH, *La Société féodale* (Paris, 1939–40), 2 vols.
 ROBERT BOUTRUCHE, *Seigneurie et féodalité*, vol. I (Paris, 1959).
 RUSHTON COULBORN, ed., *Feudalism in History* (Princeton, 1956).
 GEORGES DUBY, *L'économie rurale et la vie des campagnes dans l'Occident médiéval* (Paris, 1962), 2 vols.
 AUGUSTIN FLICHE, ed., *Histoire générale de l'Eglise*, vols 7–10 (Paris, 1940–53).
 FRANÇOIS GANSHOF, *Qu'est-ce que la féodalité?* (Brussels, 1944).
 LÉOPOLD GÉNICOT, 'Sur les témoignages d'accroissement de la population en Occident du XIe au XIIIe siècle', *Cahiers d'Histoire mondiale*, I (1953), 446–62.
 FRANTISEK GRAUS, 'Die Entstehung der mittelalterlichen Staaten in Mitteleuropa', *Historia X* (Prague, 1965), 5–65.
 ROBERT S. LOPEZ, 'Still another Renaissance? (Tenth Century)', *American Historical Review*, 57 (1951–2) (and 'Symposium on the Tenth Century', *Medievalia et Humanistica* 8, 1955).
 HEINRICH MITTEIS, *Der Staat des hohen Mittelalters*, (5th ed. Weimar, 1955).
 —, *Lehnrecht und Staatsgewalt* (Weimar, 1933).

LUCIEN MUSSET, *Les invasions, le second assaut contre l'Europe chrétienne (VIIe-XIe siècles)* (Paris, 1965).

CHARLES E. PERRIN, 'Le servage en France et en Allemagne', *X Congresso Internazionale di Scienze Storiche* (Rome, 1955) *Relazioni*, vol. III, 213-45.

CHARLES PETIT-DUTAILLIS, *La monarchie féodale en France et en Angleterre, Xe-XIIIe siècles* (Paris, 1933).

JOSÉ LUIS ROMERO, *La revolución burguesa en el mundo feudal* (Buenos Aires, 1967).

JOSIAH COX RUSSELL, *British Medieval Population* (Albuquerque, 1948).

—, *Late Ancient and Medieval Population* (Philadelphia, 1958).

KENNETH M. SETTON, ed., *A History of the Crusades* (Philadelphia, 1958-62), 2 vols.

W. ULLMANN, *The Growth of Papal Government in the Middle Ages* (London, 1955).

LÉO VERRIEST, *Noblesse, chevalerie, lignage* (Brussels, 1960).

2. Western and Central Europe

JAN DHONDT, *Etudes sur la naissance des principautés territoriales en France* (Brugge, 1948).

GEORGES DUBY, 'Une enquête à poursuivre, la noblesse dans la France médiévale', *Revue Historique*, 459 (1961), 1-22.

FERDINAND LOT, 'L'état des paroisses et des feux de 1328', *Bibliothèque de l'Ecole des Chartres*, 90 (1929), 5-107 and 256-315.

E. KANTOROWICZ, *Kaiser Friedrich II* (3rd ed., Berlin, 1936), 2 vols.

ROBERT HOLTZMANN, *Kaiser Otto der Grosse* (Berlin, 1936).

GERD TELLENBACH, *Die Entstehung des deutschen Reiches* (Munich, 1940).

3. East Europe

ALEKSANDER GIEYSZTOR, 'Les origines de l'Etat polonais', *La Pologne au Xe Congrès international des Sciences Historiques à Rome* (Warsaw, 1955), 55-81.

FRANTISEK GRAUS, *L'Empire de Grande-Moravie, sa situation dans l'Europe de l'époque et sa structure intérieure* (Prague, 1963).

TADEUSZ LADOGORSKI, *Study on Poland's Population in the Fourteenth Century* (Wroclaw, 1958).

4. The Slavs

P. DUTHILLEUL, *L'évangélisation des Slaves, Cyrille et Méthode* (Brussels, 1963).

HENRYK LOWNIANSKI, 'La genèse des Etats slaves et ses bases sociales et économiques', *La Pologne au Xe Congrès international des Sciences Historiques à Rome* (Warsaw, 1955), 29-53.

5. *Byzantium*

FRANCIS DVORNIK, *Le schisme de Photius, histoire et légende* (Paris, 1950).

HÉLÈNE GLYKATZI-AHRWEILER, *Byzance et la mer, la marine de guerre, la politique et les institutions maritimes de Byzance aux VIIe–XVe siècles* (Paris, 1966).

—, *Recherches sur l'administration de l'Empire byzantin aux IXe–XIe siècles* (Paris, 1960).

M. JUGIE, *Le schisme byzantin, aperçu historique et doctrinal* (Paris, 1941).

A. P. KAZHDAN, *Derevnia i gorod v Vizantij IX–X vekov* (Moscow, 1960).

PAUL LEMERLE, 'Esquisses pour une histoire agraire de Byzance', *Revue Historique*, 219–20 (1958–9), 32–74, 254–84, and 43–94.

GEORG OSTROGORSKIJ, *Pour l'histoire de la féodalité byzantine* (French trans., Brussels, 1954).

6. *Culture Contacts*

RICHARD LEMAY, 'Dans l'Espagne du XIIe siècle, les traductions de l'arabe au latin', *Annales E.S.C.* (1963), 639–65.

JOSÉ MARIA VALLICROSA, 'La corriente de las traducciones científicas de origen oriental hasta fines del siglo XIII', *Cahiers d'histoire mondiale*, II (1954), 395–428.

LUCIEN MUSSET, 'Influence réciproques du monde scandinave et de l'Occident dans le domaine de la civilisation au Moyen Age', *Cahiers d'Histoire mondiale*, I (1953), 72–90.

Oriente ed occidente nel medio evo (Rome, 1957).

R. W. SOUTHERN, *Western views of Islam in the Middle Ages* (Cambridge, Mass., 1962).

III. THE EVOLUTION OF TECHNIQUES

R. and R. C. ANDERSON, *The Sailing Ship* (London, 1947).

MARC BLOCH, 'Avènement et conquêtes du moulin à eau', *Annales* (1935), 538–63.

—, 'Comment et pourquoi finit l'esclavage antique', *ibid.* (1947), 30–44, 161–70.

—, 'Les inventions médiévales', *Annales d'Histoire économique et sociale*, (1935), 634–43.

AUGUSTE CHOISY, *Histoire de l'architecture*, vol. II (Paris, 1899).

PIERRE DU COLOMBIER, *Les chantiers des cathédrales, d'après les texts, les miniatures, les vitraux et les sculptures* (Paris, 1953).

MAURICE DAUMAS, ed., *Histoire générale des techniques*, vol. I, *Les origines de la civilisation technique* (Paris, 1962).

GEORGES DUBY, *L'économie rurale et la vie des campagnes dans l'occident médiéval* (Paris, 1962), 2 vols.

J. F. FINO, *Forteresses de la France médiévale: construction, attaque, défense* (Paris, 1967).

BERTRAND GILLE, 'Technological Developments in Europe: 1100 to 1400', in Guy S. Métraux and François Crouzet, eds., *The Evolution of Science* (New York, 1963), 168-219.

GWILYN PEREDUR JONES, 'Building in Stone in Medieval Western Europe', *Cambridge Economic History of Europe* (Cambridge, 1952), vol. II, 493-518.

PIERRE LAVEDAN, *French Architecture* (London, 1944).

S. LILLEY, *Men, Machines and History* (London, 1948).

R. S. LOPEZ, *The Birth of Europe* (New York, 1967), Bk 2, Chapter 1.

JOHN U. NEF, 'Mining and Metallurgy in Medieval Civilization', *The Cambridge Economic History of Europe* (Cambridge, 1952), vol. II, 430-92.

LEFEBVRE DES NOËTTES, *L'attelage du cheval à travers les âges* (Paris, 1931).

CHARLES PARAIN, 'The Evolution of Agricultural Technique', *The Cambridge Economic History of Europe* (Cambridge, 1942), vol. I, 118-68.

E. PANOFSKY, *Gothic Architecture and Scholasticism* (New York, 1957).

M. M. POSTAN, E. E. RICH and E. MILLER, eds., *The Cambridge Economic History of Europe*, vol. III, *Economic Organization and Policies in the Middle Ages* (Cambridge, 1963).

RAYMOND de ROOVER, 'The Development of Accounting Prior to Luca Pacioli According to the Account Books of Medieval Merchants', *Studies in the History of Accounting* (London, 1956).

EDOUARD SALIN, *La civilisation mérovingienne: Les techniques* (Paris, 1957), vol. III.

CHARLES SINGER, E. J. HOLMYARD, A. R. HALL, T. L. WILLIAMS, eds., *A History of Technology*, vol. II, *The Mediterranean Civilizations and the Middle Ages* (Oxford, 1956).

CHARLES VERLINDEN, *L'esclavage dans L'Europe médiévale* (Bruges, 1955), vol. I.

IV. THE EVOLUTION OF LANGUAGES

PIERRE BEC, *La langue occitane* (Paris, 1963).

FERDINAND BRUNOT, *Histoire de la langue française* (Paris, 1905), vol. I.

R. M. DAWKINS, 'The Greek Language in the Byzantine Period,' in N. H. Baynes and H. Moss, eds., *Byzantium* (1948), 252-67.

W. D. ELCOCK, *The Romance Languages* (London, 1960).

WILLIAM J. ENTWISTLE and W. A. MORISON, *Russian and the Slavonic Languages* (London, 1956).

ERNST GAMILLSCHEG, *Romania Germanica, Sprach- und Siedlungsgeschichte der Germanen auf dem Boden des alten Römerreiches* (Berlin, 1934-6), 3 vols.

RAFAEL LAPESA, 'El desarrollo histórico de las lenguas ibero-románicas durante los siglos V al XIII', *Cahiers d'histoire mondiale*, V, 3 (1960), 573-605.

FERDINAND LOT, 'A quelle époque a-t-on cessé de parler latin?', *Bulletin du Canje* (1931), 97-159.

ADOLPHE MEILLET, *Aperçu d'une histoire de la langue grecque* (Paris, 1920).

—, *Le slave commun* (Paris, 1934).

FERNAND MOSSÉ, *Esquisse d'une histoire de la langue anglaise* (Lyons, 1947).

—, *Manuel de la langue gothique* (Paris, 1956).

HENRY F. MULLER, *L'époque mérovingienne; essai de synthèse de philologie et d'histoire* (New York, 1945).

LUCIEN MUSSET, *Introduction à la runologie (d'après les notes de F. Mossé)* (Paris, 1966).

G. NICOLAU, *L'origine du cursus rythmique et les débuts de l'accent d'intensité en latin* (Paris, 1930).

ALFREDO SCHIAFFINI, *Momenti di storia della lingua italiana* (Rome, 1953).

ERNST SCHWARZ, *Goten, Nordgermanen, Angelsachsen. Studien zur Ausgliederung der Germanischen Sprachen* (Bern, 1951).

GEORGES STRAKA, 'La dislocation linguistique de la Romania et la formation des langues romanes à la lumière de la chronologie relative des changements phonétiques', *Revue de linguistique romane* (1956), 249-67.

ERNEST TONNELAT, *Histoire de la langue allemande* (Paris, 1952).

WALTER von WARTBURG, *Evolution et structure de la langue française* (Paris, 1932).

—, *Les origines des peuples romans* (Paris, 1941).

—, *Problèmes et méthodes de la linguistique* (Paris, 1946).

V. LEARNING AND TEACHING IN THE MIDDLE AGES

LOUIS BRÉHIER, 'L'enseignement classique et l'enseignement religieux à Byzance', *Revue d'histoire et de philosophie religieuse de la Faculté de Théologie protestante de Strasbourg* (1941).

PH. DELHAYE, *L'organisation scolaire au XIIe siècle* (Lille, 1954).

HEINRICH DENIFLE, *Die Entstehung der Universitäten des Mittelalters bis 1400* (Berlin, 1885).

CHARLES H. HASKINS, *The Renaissance of the Twelfth Century* (Cambridge, Mass., 1927).

G. PARÉ and others, *La renaissance du XIIe siècle, les écoles et l'enseignement* (Ottawa-Paris, 1933).

HENRI PIRENNE, 'L'instruction des marchands au Moyen Age', *Annales d'Histoire économique et sociale* (1929), 13-28.

HASTING RASHDAL L, *The Universities of Europe in the Middle Ages* (F. M. Powicke and A. B. Emden, eds., 2nd ed.; Oxford, 1936), 3 vols.

PIERRE RICHÉ, *Education et culture dans l'Occident barbare, VIe-VIIIe siècles* (Paris, 1962).

JAMES W. THOMPSON, *The Literacy of the Laity in the Middle Ages* (Berkeley, Calif., 1939).

LYNN THORNDIKE, *University Records and Life in the Middle Ages* (New York, 1944).

M. N. TIKHOMIROV, 'L'écriture urbaine dans l'ancienne Russie des XIe-XIIIe siècles', *Cahiers d'histoire mondiale*, V. 3 (1960), 661-78.

VI. RELIGION, LAW, AND POLITICAL THEORY

1. Religion

R. R. BETTS and others, 'Movimenti religiosi popolari ed eresie nel medioevo', Comitato internazionale di scienze storiche, X congresso internazionale di scienze storiche, *Relazioni*, (Rome, September 1955), vol. III, 305-541.

ARNO BORST, *Die Katharer* (Stuttgart, 1953).

G. G. COULTON, *Five Centuries of Religion* (Cambridge, 1950).

H. DELEHAYE, *The Legends of the Saints* (London, 1907).

E. S. DUCKETT, *The Gateway to the Middle Ages* (New York, 1938).

HERBERT GRUNDMANN, *Religiöse Bewegungen im Mittelalter* (Hiddesheim, 1960).

HERBERT HUNGER, *Reich der neuen Mitte, der christliche Geist der byzantinischen Kultur* (Graz, 1965).

RAFFAELLO MORGHEN, *Medioevo cristiano* (Bari, 1951).

RENÉ NELLI, *Le phénomène cathare* (Toulouse, Paris, 1964).

DIMITRI OBOLENSKY, *The Bogomiles* (Cambridge, 1948).

KENNETH M. SETTON, ed., *History of the Crusades* (Philadelphia, 1958-62), 2 vols.

A. S. TURBERVILLE, *Mediaeval Heresy and the Inquisition* (London, 1923).

'Vaudois languedociens et pauvres catholiques', *Cahiers de Fanjeaux*, no. 2 (Toulouse, 1967).

2. Theology and Philosophy

ROGER BARON, *Hugues de Saint-Victor* (Paris, 1963).

M. D. CHENU, *La théologie au XIIe siècle* (Paris, 1957).

—, *La théologie comme science au XIIIe siècle* (3rd ed., Paris, 1957).

F. COPLESTON, *Mediaeval Philosophy, Augustine to Scotus* (London, 1950).

PH. DELHAYE, *Pierre Lombard* (Paris, 1961).

MAURICE de WULF, *Mediaeval Philosophy Illustrated from the System of Aquinas* (Cambridge, Mass., 1922).

ETIENNE GILSON, *The Spirit of Mediaeval Philosophy* (New York, 1936).

—, *History of Christian Philosophy in the Middle Ages* (New York, 1953).

R. KLIBANSKY, *Continuity of the Platonic Tradition During the Middle Ages* (London, 1939).

GORDON LEFF, *Medieval Thought from Saint Augustine to Ockham* (London, 1958).

Augustinus Magister, Congrès international augustinien, Paris, 1954, (Paris, 1955), 3 vols.

H. MARROU, *Saint Augustin et la fin de la culture antique* (Paris, 1937).

P. MORAUX and others, *Aristote et saint Thomas d'Aquin* (Louvain, 1959).

M. SEIDLAYER, *Currents of Medieval Thought* (Oxford, 1960).

J. G. SIKES, *Peter Abailard* (Cambridge, 1932).

F. van STEENBERGHEN, *Aristote en Occident* (Louvain, 1946).

—, *Les œuvres et la doctrine de Siger de Brabant* (Brussels, 1938).

TATAKIS, 'La philosophie byzantine' in Emile Brehier, *Histoire de la philosophie* (Paris, 1949).

3. Legal Thought

JEAN-MARIE AUBERT, *Le droit romain dans l'œuvre de saint Thomas* (Paris, 1955).

GABRIEL LE BRAS, and others, *L'âge classique (1140-1378), sources et théories du droit* (Paris, 1965).

F. CALASSO, *Il Medioevo del Diritto* (Milan, 1954).

P. COLLINET, *Etudes historiques sur le droit de Justinien* (Paris, 1912-25), 2 vols.

C. G. CRUMP, E. F. JACOBS, eds., *The Legacy of the Middle Ages* (London, 1926), (chapters on law).

WIEBKE FESEFELDT, *Englische Staatstheorie des 13. Jahrhunderts, Henry de Bracton und sein Werk* (Göttingen, 1961).

PAUL FOURNIER, 'Un tournant de l'histoire du droit, 1060-1140', *Nouvelle Revue Historique de droit*, (1917), 129-80.

JEAN GAUDEMÉT, *La formation du droit séculier et du droit de l'Eglise aux IV^e et Ve siècles* (Paris, 1957).

H. F. JOLOWICZ, *Historical Introduction to the Study of Roman Law* (Cambridge, 1952).

P. KOSCHAKER, *Europa und das römische Recht* (Munich-Berlin, 1947).

R. C. MORTIMER, *Western Canon Law* (Berkeley, 1953).

T. F. T. PLUCKNETT, *A Concise History of the Common Law* (London, 1956).

Sir Francis POLLOCK and F. W. MAITLAND, *The History of English Law Before the Time of Edward I* (2nd ed., Cambridge, 1911), 2 vols.

J. B. SÄGMÜLLER, *Lehrbuch des katholischen Kirchenrechtes* (4th ed., Freiburg in Br., 1925).

RICHARD SCHRÖDER und EBERHARD v. KÜNNSBERG, *Lehrbuch der deutschen Rechtsgeschichte* (7th ed., Berlin-Leipzig, 1932).

A. SOLMI, *Storia del diritto italiano* (3rd ed., Milan, 1930).

WINFRIED TRUSEN, *Anfänge des gelehrtten Rechts in Deutschland, ein Beitrag zur Geschichte der Frührezeption* (Wiesbaden, 1962).

LUIS G. de VALDEAVELLANO, 'El desarrollo del derecho en la península ibérica hasta alrededor del año 1300', *Cahiers d'histoire mondiale*, III, (1957), 833-53.

PAUL VINOGRADOV, *Roman Law in Medieval Europe* (2nd ed., Oxford, 1929).

4. Political Thought

H. X. ARQUILLIÈRE, *L'Augustinisme politique, essai sur la formation des théories politiques du Moyen Age* (2nd ed., Paris, 1956).

A. PASSERIN D'ENTRÈVES, *The Medieval Contribution to Political Thought* (Oxford, 1939).

JEAN GAGÉ, 'La théologie de la Victoire impériale', *Revue historique*, CLXXI (1933).

ERNST H. KANTOROWICZ, *The King's Two Bodies: A Study in Mediaeval Political Theology* (Princeton, 1957).

FRITZ KERN, 'Recht und Verfassung im Mittelalter', *Historische Zeitschrift*, CXX (1919), 1-79.

RALPH LERNER and MAHDI MUSHIN, *Medieval Political Philosophy, a Sourcebook* (New York, 1963).

JOSÉ ANTONIO MARAVALL, 'El pensamiento político en España del año 400 al 1300', *Cahiers d'histoire mondiale*, IV (1958), 818-32.

C. H. MCILWAIN, *The Growth of Political Thought in the West* (New York, 1932).

J. B. MORRALL, *Political Thought in Medieval Times* (London, 1958).

SIDNEY PAINTER, *The Reign of King John* (Baltimore, 1949).

HERMANN SEGALL, *Der 'Defensor Pacis' des Marsilius von Padua* (Wiesbaden, 1959).

PERCY ERNST SCHRAMM, *Kaiser, Rom und Renovatio* (Stuttgart, 1929), 2 vols.

WALTER ULLMANN, *Principles of Government and Politics in the Middle Ages* (London, 1961).

Sir R. W. and A. J. CARLYLE, *A History of Medieval Political Thought in the West* (Edinburgh-London, 1903-36), 5 vols.

VII. SCIENCE IN EUROPE

A. C. CROMBIE, *Augustine to Galileo, the History of Science A.D. 400-1650* (London, 1952; French enlarged edition, Paris, 1959), 2 vols.

J. L. DELFOSSE, *Les abaques* (Paris, 1965).

E. J. DIJKSTERHUIS, 'History of Gravity and Attraction Before Newton', *Cahiers d'histoire mondiale*, I (1954), 839-956.

PIERRE DUHEM, *Le système du Monde, histoire des doctrines cosmologiques de Platon à Copernic* (Paris, 1913-58), 9 vols.

C. H. HASKINS, *Studies in the History of Medieval Science* (Cambridge, 1924).

DENISE JALABERT, *La flore sculptée des monuments du Moyen Age en France* (Paris, 1965).

ALEX. KOYRÉ, 'Du monde de l'à-peu-près à l'univers de la précision', *Critique*, fasc. 28 (September, 1948), 806-23.

L. C. MACKINNEY, 'Medical Education in the Middle Ages', *Cahiers d'histoire mondiale*, II (1955), 835-61.

GEORGE SARTON, *Introduction to the History of Science*, I and II (Washington, 1927-31), 3 vols.

RENÉ TATON, ed., *Histoire générale des sciences*, I, *La science antique et médiévale* (Paris, 1957).

LYNN THORNDIKE, *History of Magic and Experimental Science* (New York, 1923-41), 6 vols.

LYNN WHITE, 'Natural Science and Naturalistic Art in the Middle Ages', *American Historical Review*, III (1946-7), 421-35.

VIII. LITERARY DEVELOPMENTS

RETO R. BEZZOLA, *Les origines et la formation de la littérature courtoise en Occident (500-1200)* (Paris, 1958-60), 2 vols.

HELMUT de BOOR and RICHARD NEWALD, *Geschichte der deutschen Literatur* (München, 1949-53), vols I and II.

CHARLES CAMPROUX, *Histoire de la littérature occitane* (Paris, 1953).

ERNST ROBERT CURTIUS, *European Literature and the Latin Middle Ages* (New York, 1953).

J. de GHELLINCK, *Littérature latine au Moyen Âge* (Paris, 1939), 2 vols.

K. W. HAUSSIG, *Kulturgeschichte von Byzanz* (Stuttgart, 1959).

W. T. H. JACKSON, *The Literature of the Middle Ages* (New York, 1960).

K. KRUMBACHER, *Geschichte der byzantinischen Literatur* (München, 1897).

M. L. W. LAISTNER, *Thought and Letters in Western Europe, A.D. 500 to 900*. (Ithaca, 1957).

MARY D. LEGGE, *Anglo-Norman Literature and its Background* (Oxford, 1964).

C. S. LEWIS, *The Discarded Image: An Introduction to Medieval and Renaissance Literature* (Cambridge, 1964).

ROGER S. LOOMIS, *Introduction to Medieval Literature, Chiefly in England: Reading List Bibliography* (Oxford, 1939).

EMILIO GONZALEZ LOPEZ, *La Chanson de Roland et la tradition épique des Francs* (Paris, 1960), French edition.

ALEXANDRE MASSERON, *Dante, la Divine Comédie* (Paris, 1947-9), 4 vols.

RENÉ NELLI, *L'érotique des troubadours* (Toulouse, 1963).

RAMÓN MENÉNDEZ PIDAL, *La Chanson de Roland et la tradition épique des Francs* (Paris, 1960), French edition.

RAMÓN MENÉNDEZ PIDAL, *The Cid and his Spain* (London, 1927).

ITALO SICILIANO, *Les origines des chansons de geste* (Paris, 1951).

H. O. TAYLOR, *The Medieval Mind* (New York, 1925).

ANTONIO VISCARDI, *Storia letteraria d'Italia, le origini* (Milan, 1957).

HELLEN WADDELL, *The Wandering Scholars* (London, 1927).

K. YOUNG, *The Drama of the Mediaeval Church* (Oxford, 1933).

IX. ARTISTIC DEVELOPMENTS

MARCEL AUBERT and others, *Le vitrail français* (Paris, 1958).

J. BECKWITH, *Early Medieval Art* (London, 1964).

J. PUIG I CADAFALCH, *La géographie et les origines du premier art roman* (Paris, 1935).

JACQUES CHAILLEY, *Histoire musicale du Moyen âge* (Paris, 1950).

K. J. CONANT, *Carolingian and Romanesque Architecture, 800–1200* (London, 1959).

CHARLES DIEHL, *Manuel d'art byzantin* (Paris, 1925), 2 vols.

HENRI FOCILLON, *Art d'occident* (Paris, 1938).

ANDRE GRAVAR, *Martyrium* (Paris, 1946), 2 vols and atlas.

JEAN HUBERT, *L'art pré-roman, evolution du style, du Ve au Xe siècle* (Paris, 1938).

JEAN HUBERT and others, *L'empire carolingien* (Paris, 1968).

—, *L'europe des invasions, L'Univers des formes* (Paris, 1967).

RICHARD KRAUTHEIMER, *Early Christian and Byzantine Architecture* (London, 1965).

P. LAVEDAN, *French Architecture* (London, 1956).

PAUL LEMERLE, *Le style byzantin* (Paris, 1943).

R. S. LOPEZ, *Byzantine Studies* (Chicago, 1968).

EMILE MÂLE, *L'art religieux du XIIe siècle en France* (Paris, 1947).

—, *L'art religieux du XIIIe siècle en France* (Paris, 1931).

C. R. MOREY, *Medieval Art* (New York, 1942).

E. PANOFSKY, *Gothic Architecture and Scholasticism* (New York, 1957).

JEAN PERROT, *L'orgue, de ses origines hellénistiques à la fin du XIIIe siècle* (Paris, 1965).

D. T. RICE, *Art of the Byzantine Era* (London, 1963).

W. G. WAITE and others, *The Art of Music, A Short History of Musical Styles and Ideas* (New York, 1960).

D. AFRICA, THE AMERICAS, AND OCEANIA

I. AFRICA

A. J. ARKELL, A Christian Church and Monastery at Ain Farah, Kush VII, 1959.

—, *A History of the Sudan to AD 1821* (London, 1950).

—, 'Gold Coast copies of 5th–7th-century bronze lamps', *Antiquity* (1950), 38–40.

J. BARRAU, 'De l'homme cueilleur à l'homme cultivateur: l'exemple océanien', *Cahiers d'histoire mondiale*, X (1967) 275–92.

G. CATON-THOMPSON, *The Zimbabwe culture* (1931).

Colloque sur l'Art Nègre, *1er Festival Mondial des Arts Nègres I* (Paris, 1967).

C. COQUERY, *La Découverte de l'Afrique* (Paris, 1965).

B. DAVIDSON, *Old Africa Rediscovered* (London, 1959).

M. DELAFOSSE, *Les Noirs de l'Afrique* (Paris, 1941).

J. DEVISSE, D. and S. ROBERT, *L'archéologie et l'histoire en Afrique de l'Ouest, Teg Daoust (Mauritanie)* (Paris, 1969).

—, *Fouilles à Teg Daoust* (Paris, 1969).

G. DIETERLIN, *Essai sur la religion bambara* (Paris, 1950).

CH. A. DIOP, *L'Afrique Noire pré-coloniale* (Paris, 1960).

J. DORESSE, *L'Empire du Père Jean* (Paris, 1957).

J. L. DUYDENDAK, *China's Discovery of Africa* (London, 1949).

A. HUICI MIRANDA, 'La salida de los Almoravides del desierto y el reinado de Yūsuf b. Tašfin: aclaraciones y rectificaciones', *Hesperis* (1959). 155–82.

H. IDRIS, *La Berbérie orientale sous les Zirides, X–XIIème siècles* (Paris, 1962).

B. I. KAKÉ, *Die Zivilisation des Grossen Nigers-Bogens vom II bis zum 16 Jahrhundert Saeculum* (1967), 93–115.

B. KAMIAN, 'L'Afrique occidentale pré-coloniale et le fait urbain', *Présence Africaine* (1958), 76–80.

J. S. KIRKMAN, 'Les importations de céramique sur la côte du Kenya', *Revue de Madagascar* (1967), nos 36 to 37.

J. KI-ZERBO, *Les Civilisations Noires* (Paris, 1962).

J. LAUDE, *Les Arts de l'Afrique Noire* (Paris, 1966).

J. P. LEBEUF, *Archéologie tchadienne, Les Sao du Cameroun et du Tchad* (Paris, 1962).

J. P. LEBEUF and AM MASSON-DESTOURBET, *La civilisation du Tchad* (Paris, 1950).

M. LEIRIS and J. DELANGE, *Afrique Noire—La création plastique* (Paris, 1967).

T. LEWICKI, 'L'Etat nord-africain de Tahert et ses relations avec le Soudan occidental à la fin du VIIIème et au IXème siècles', *Cahiers d'Études Africaines* (1965), 513–35.

—, 'Traits d'histoire du commerce saharien: marchands et missionnaires ibadites au Soudan occidental et central au cours des VIII–XIIème siècles', *Etnografia Polska* (1964), 291–311.

J. MAQUET, *Afrique, les civilisations noires* (Paris, 1962).

—, *Les civilisations noires, Histoires des Techniques, Arts, Sociétés* (1966).

G. MARQUART, *Die Nenin Sammlung des Reichsmuseums für Völkerkunde in Leiden* (Leyden, 1913).

Z. A. MARSH and G. KINGSNORTH, *An Introduction to History of East India* (Cambridge, 1961).

R. MAUNY, *Les navigations médiévales sur les côtes sahariennes antérieures à la découverte portugaise* (Lisbon, 1960).

—, *Tableau géographique de l'Afrique de l'Ouest au Moyen-Age* (Dakar, 1961).

K. MICHALOWSKI, *Faras, Centre artistique de la Nubie chrétienne* (1966).

A. MIQUEL, *La géographie humaine du monde musulman jusqu'au milieu du XIème siècle avant Jésus-Christ I* (Paris, 1967).

U. MONNERET DE VILLARD, *Storia della Nubia cristiana* (Rome, 1938).

CH. MONTEIL, *Les Empires du Mali, Etude d'Histoire et de sociologie soudanaise* (1968).

V. MONTEIL, *L'Islam Noir* (Paris, 1964).

V. MONTEIL, R. VAN CHI, R. MAUNY, J. DESANGES, *Histoire de l'Afrique à l'usage du Sénégal* (Paris, 1968).

P. F. DE MOREAS FARIAS, 'The Almoravids: Some Questions Concerning the Character of the Movement During its Periods of Closest Contact with the Western Sudan', *B.I.F.A.N.B.* (1967), 794-878.

J. NENQUIN, *Excavations at Sanga 1957 The protohistoric* (Terwuren, 1963).

DJIBBLIL TAMSIR NIANE, 'Essai sur l'empereur de Gae' (Polykopie Conakry, 1968).

—, 'Mise en place des populations de Haute Guinée', *Recherches africaines* (1960).

—, 'Mythes, légendes et sources orales dans l'oeuvre de Mahmoud Kati', *Recherches Africaines* (1964), 36-42.

J. NIANGORAN BOUAH, *La division du temps et le calendrier rituel des peuples lagunaires de la Côte d'Ivoire* (Paris, 1964).

S. PANKHURST, *Ethiopia—A cultural history* (Essex, 1955).

D. PAULME, 'L'Afrique noire jusqu'au XIVème siècle', *Cahiers d'histoire mondiale*, III (1956), pp. 277-301 and 561-82.

P. PELISSIER, *Les paysans du Sénégal* (St Yrieix, 1968).

R. PORTERES, 'Vieilles agricultures africaines', *L'Agronomie tropicale* (1950), 489-507.

A. PRASAD, *Africa's Trade with India in the Pre-European Period (740-1505)*. 'Le Problème des sources de l'histoire de l'Afrique Noire jusqu'à la colonisation européenne'. Rapport collectif sous la direction de R. MAUNY, J. GLENNISON et W. MARKOW, XIIème Congrès des Sciences Historiques, Rapports II—Histoire des Continents (Vienna, 1966), 177-232.

E. RALAIMIHOATRA, *Histoire de Madagascar I* (Tenerife, 1965).

W. G. L. ROUDES, 'Matériaux pour une histoire de Sud Est Africain jusqu'au XVIIIème siècle', *Annales* (1963), 956-80.

J. ROUGET, 'La musique d'Afrique noire', *Encyclopédie de la Pléiade, Histoire de la Musique* I (Paris, 1960), 215-37.

J. SAUVAGET, *Les épitaphes royales de Gao* (Al Andelus, 1949), 123-41.

J. SCHACHT, 'Sur la diffusion des formes d'architecture religieuse musulmane à travers le Sahara', *Travaux de l'Institut de Recherches sahariennes* (1954), 11-27.

J. TOUSSAINT, *Histoire de l'Océan Indien* (Paris, 1961).

Y. URVOY, *Histoire de l'Empire du Bornou* (Paris, 1949).

J. VANSINA, *Kingdom of the Savana: A History of States in Central Africa Before the Colonial Period* (1966).

B. VIRÉ, 'Stèles funéraires musulmanes soudano-sahariennes', *B.I.F.A.N.B.* (1958), 459-500.

F. WILLETT, *Ifé in the History of West African Sculpture* (London, 1967).

II. NEW WORLD ARCHAEOLOGY

The principal recent summaries of New World archaeology, which are listed in the 'General' section, contain extensive bibliographies. Several (Alcina, 1965; Bushnell, 1965 and Willey, 1966) are well illustrated. Although not repeated in the regional bibliographies, they should be consulted in addition to the references provided for each region.

i. General

JOSÉ ALCINA FRANCH, *Manual de Arqueología Americana* (Madrid, 1965).

G. H. S. BUSHNELL, *Ancient Arts of the Americas* (New York, 1965).

MIGUEL COVARRUBIAS, *The Eagle, The Jaguar and the Serpent: Indian Art of the Americas* (New York, 1954).

JESSE D. JENNINGS and EDWARD NORBECK, eds., *Prehistoric Man in the New World* (Chicago, 1964).

BETTY J. MEGGERS and CLIFFORD EVANS, eds., *Aboriginal Cultural Development in Latin America: An Interpretative Review* (Washington, 1963).

ROBERT F. SPENCER and JESSE D. JENNINGS, et al, *The Native Americans* (New York, 1965).

JULIAN H. STEWARD, ed., *Handbook of South American Indians* (Washington, 1946-59).

ROBERT WAUCHOPE, ed., *Handbook of Middle American Indians* (Austin, 1964-).

GORDON R. WILLEY, *An Introduction to American Archaeology*. Vol. I. *North and Middle America* (New York, 1966).

JAMES B. GRIFFIN, 'A Non-Neolithic Copper Industry in North America', *XXXVI Congreso Internacional de Americanistas, Actas y Memorias*, Vol. I, 281-5 (Seville, 1966).

C. VANCE HAYNES JR., 'Muestras de C14, de Tlapacoya, Estado de México', *Instituto Nacional de Antropología e Historia, Bul. 29*, 49-52 (Mexico, 1967).

JAMES J. HESTER, 'Late Pleistocene Extinction and Radiocarbon Dating', *American Antiquity*, vol. 26, 58-77 (1960).

—, 'Origins of the Clovis Culture', *XXXVI Congreso Internacional de Americanistas, Actas y Memorias*, vol. I, 129-42 (Seville, 1966).

ARTHUR J. JELINEK, 'An Artifact of Possible Wisconsin Age', *American Antiquity*, vol. 31, 434-5 (1966).

THOMAS F. KEHOE, 'The Distribution and Implications of Fluted Points in Saskatchewan', *American Antiquity*, vol. 31, 530-9 (1966).

ALEX D. KRIEGER, 'The Earliest Cultures in the Western United States', *American Antiquity*, vol. 28, 138-43 (1962).

—, 'Early Man in the New World', *Prehistoric Man in the New World*, Jennings and Norbeck, eds., 23-81 (Chicago, 1964).

E. P. LANNING and E. A. HAMMEL, 'Early Lithic Industries of Western South America', *American Antiquity*, vol. 27, 139-54 (1961).

LORENA MIRAMBELL, 'Excavaciones en un sitio pleistocénico de Tlapacoya, México', Instituto Nacional de Antropología e Historia, *Bul.* 29, 37-41 (Mexico, 1967).

HANSJURGEN MULLER-BECK, 'Paleohunters in America: Origins and Diffusion', *Science*, vol. 152, 1191-1210 (1966).

WILLIAM A. RITCHIE, 'Traces of Early Man in the Northeast' (Albany, 1957).

FRED WENDORF, 'Early Man in the New World: Problems of Migration', *The American Naturalist*, vol. 100, 253-70 (1966).

2. Pre-Projectile Point, Paleo-Indian and Intermediate Periods

GEORGE A. AGOGINO, 'A New Point Type from Hell Gap Valley, Eastern Wyoming', *American Antiquity*, vol. 26, 558-60 (1961).

HERBERT L. ALEXANDER JR., 'The Levi Site: A Paleo-Indian Campsite in Central Texas', *American Antiquity*, vol. 28, 510-28 (1963).

LUIS AVELEYRA ARROYO DE ANDA, 'The Primitive Hunters', *Handbook of Middle American Indians*, vol. I, 384-412 (Austin, 1964).

MARIA DA CONCEIÇÃO DE M. C. BECKER, 'Quelques données nouvelles sur les sites préhistoriques de Rio Claro, Etat de São Paulo', XXXVI Congreso Internacional de Americanistas, *Actas y Memorias*, vol. I, 445-58 (Sevilla, 1966).

ROBERT E. BELL, *Investigaciones arqueológicas en el sitio de El Inga, Ecuador* (Quito, 1965).

ALAN L. BRYAN, *Paleo-American Prehistory* (Pocatello, 1965).

DOUGLAS S. BYERS, 'The Bering Bridge—Some Speculations', *Ethnos* 1-2, 20-6 (Stockholm, 1957).

J. M. CRUXENT, 'Artifacts of Paleo-Indian Type, Maracaibo, Zulia, Venezuela', *American Antiquity*, vol. 27, 576-9 (1962).

JAMES E. FITTING, 'Bifurcate-stemmed Projectile Points in the Eastern United States', *American Antiquity*, vol. 30, pp. 92-4 (1964).

ALBERTO REX GONZÁLEZ 'Las culturas paleoindias o paleolíticas sud-americanas: resumen y problemática actual', XXXVI Congreso Internacional de Americanistas, *Actas y Memorias*, vol. I, 15-41 (Seville, 1966).

3. Introduction and Diffusion of Pottery

RIPLEY P. BULLEN, 'Radiocarbon Dates for Southeastern Fiber-tempered Pottery', *American Antiquity*, vol. 27, 104-6 (1961).

JAMES A. FORD, 'Early Formative Cultures in Georgia and Florida', *American Antiquity*, vol. 31, 781-99 (1966).

BETTY J. MEGGERS and CLIFFORD EVANS, 'Especulaciones sobre rutas tempranas de difusión de la cerámica entre Sur y Mesoamérica', *Hombre y Cultura*, vol. I, no. 3, 1-15 (1964).

—, CLIFFORD EVANS and EMILIO ESTRADA, *Early Formative Period of Coastal Ecuador: The Valdivia and Machalilla Phases* (Washington, 1965).

GERARDO REICHEL-DOLMATOFF, 'Puerto Hormiga: un complejo prehistórico marginal de Colombia (nota preliminar)', *Revista Colombiana de Antropología*, vol. 10, 347-54 (1961).

4. Origin of Agriculture

PAUL C. MANGELSDORF, RICHARD S. MACNEISH and GORDON R. WILLEY, 'Origins of Agriculture in Middle America', *Handbook of Middle American Indians*, vol. I, 427-45 (Austin, 1964).

RICHARD S. MACNEISH, *Second Annual Report of the Tehuacan Archaeological-Botanical Project* (Andover, 1962).

—, 'Speculations about the Beginnings of Village Agriculture in Mesoamerica', XXXVI Congreso Internacional de Americanistas, *Actas y Memorias*, vol. I, 181-5 (Seville, 1966).

ANGEL PALERM and ERIC WOLF, 'La agricultura y el desarrollo de la civilización en mesoamérica', *Revista Interamericana de Ciencias Sociales*, vol. I, no. 2 (1961).

5. The Nuclear Areas

G. H. S. BUSHNELL, *Peru* (London and New York, 1957).

PEDRO DE CIEZA DE LEÓN, *The Incas of Pedro de Cieza de León* (Norman, 1959).

MICHAEL D. COE, *The Jaguar's Children: Pre-classic Central Mexico* (New York, 1965).

—, *The Maya* (London and New York, 1966).

BERNAL DIAZ DEL CASTILLO, *The True History of the Conquest of Mexico* (New York, 1927).

FREDERIC ENGEL, 'A Preceramic Settlement on the Central Coast of Peru: Asia, Unit I', *Transactions of the American Philosophical Society*, vol. 53, part 3 (Philadelphia, 1963).

CLIFFORD EVANS and BETTY J. MEGGERS, 'Mesoamerica and Ecuador', *Handbook of Middle American Indians*, vol. 4, 243-64 (Austin, 1966).

FELIPE GUAMÁN POMA DE AYALA, *La nueva crónica y buen gobierno: Época prehispánica* (Lima, 1956).

ALFRED KIDDER II, 'South American High Cultures', *Prehistoric Man in the New World*, Jennings and Norbeck, eds., 451-86 (Chicago, 1964).

RAFAEL LARCO HOYLE, *Los Mochicas* (Lima, 1939).

J. ALDEN MASON, *The Ancient Civilizations of Peru* (Pelican Books, 1957).

BETTY J. MEGGERS, *Ecuador* (London and New York, 1966).

JUAN DE SÁMANOS, 'Relación de los primeros descubrimientos de Francisco Pizarro y Diego de Almagro', *Colección de Documentos Inéditos para la Historia de España*, vol. 5, 193-201 (Madrid, 1844).

JULIO C. TELLO, 'Discovery of the Chavin Culture in Peru', *American Antiquity*, vol. 9, 135-60 (1943).

6. *Transpacific Contact*

GORDON F. EKHOLM, 'Transpacific Contacts', *Prehistoric Man in the New World*, Jennings and Norbeck, eds., 489-510 (Chicago, 1964).

EMILIO ESTRADA and BETTY J. MEGGERS, 'A Complex of Traits of Probable Transpacific Origin on the Coast of Ecuador', *American Anthropologist*, vol. 63, 913-39 (1961).

ROBERT HEINE-GELDERN, 'The Problem of Transpacific Influence in Mesoamerica', *Handbook of Middle American Indians*, vol. 4, 277-95 (Austin, 1966).

BETTY J. MEGGERS and CLIFFORD EVANS, 'A Transpacific Contact in 3000 B.C.', *Scientific American*, vol. 214, no. 1, 28-35 (1966).

7. *The Intermediate or Circum-Caribbean Area*

CLAUDE F. BAUDEZ, 'Cultural Development in Lower Central America', *Aboriginal Cultural Development in Latin America*, Meggers and Evans, eds., 45-54 (Washington, 1963).

GERARDO REICHEL-DOLMATOFF, *Colombia* (London and New York, 1965).

IRVING ROUSE, 'The Caribbean Area', *Prehistoric Man in the New World*, Jennings and Norbeck, eds., 389-417 (Chicago, 1964).

—, 'Prehistory of the West Indies', *Science*, vol. 144, pp. 499-513 (1964).

IRVING ROUSE and JOSÉ M. CRUXENT, *Venezuelan Archaeology* (New Haven, 1963).

MARIO SANOJA, 'Venezuelan Archaeology Looking Toward the West Indies', *American Antiquity*, vol. 31, 232-6 (1965).

BRADLEY SMITH, *Columbus in the New World* (New York, 1962).

8. *The Deserts*

ALBERTO REX GONZÁLEZ, 'Cultural Development in Northwestern Argentina', *Aboriginal Cultural Development in Latin America*, Meggers and Evans, eds., 103-17 (Washington, 1963).

—, 'The La Aguada Culture of Northwestern Argentina', *Essays in Pre-Columbian Art and Archaeology*, S. K. Lothrop and others, 389-420 (Cambridge, Mass., 1961).

J. CHARLES KELLEY, 'Mesoamerica and the Southwestern United States', *Handbook of Middle American Indians*, vol. 4, 95-110 (Austin, 1966).

ERIK K. REED, 'The Greater Southwest', *Prehistoric Man in the New World*, Jennings and Norbeck, eds., 175-91 (Chicago, 1964).

ANTONIO SERRANO, *Manual de la Cerámica Indígena* (Cordoba, Arg., 1958).

9. *The Forests*

CLIFFORD EVANS, 'Lowland South America', *Prehistoric Man in the New World*, Jennings and Norbeck, eds., 419-50 (Chicago, 1964).

CLIFFORD EVANS and BETTY J. MEGGERS, *Archeological Investigations on the Rio Napo, Eastern Ecuador* (Washington, 1968).

JAMES B. GRIFFIN, 'The Northeast Woodlands Area', *Prehistoric Man in the New World*, Jennings and Norbeck, eds., 223–58 (Chicago, 1964).

BETTY J. MEGGERS and CLIFFORD EVANS, *Archeological Investigations at the Mouth of the Amazon* (Washington, 1957).

—, 'An Experimental Formulation of Horizon Styles in the Tropical Forest Area of South America', *Essays in Pre-Columbian Art and Archaeology*, S. K. Lothrop and others, 372–88 (Cambridge, Mass., 1961).

HELEN C. PALMATARY, 'The Archaeology of the Lower Tapajóz Valley, Brazil', *Transactions of the American Philosophical Society*, vol. 50, part 3 (Philadelphia, 1960).

WILLIAM H. SEARS, 'The Southeastern United States', *Prehistoric Man in the New World*, Jennings and Norbeck, eds., 259–87 (Chicago, 1964).

HENRY C. SHETRONE, *The Mound-Builders* (New York, 1930).

10. *The Plains*

JOHN M. COOPER, 'The Patagonian and Pampean Hunters', *Handbook of South American Indians*, vol. 1, 127–68 (Washington, 1946).

WALDO R. WEDEL, *Prehistoric Man on the Great Plains* (Norman, 1961).

—, 'The Great Plains', *Prehistoric Man in the New World*, Jennings and Norbeck, eds., 193–220 (Chicago, 1964).

GORDON R. WILLEY, 'The Archeology of the Greater Pampa', *Handbook of South American Indians*, vol. 1, 25–46 (Washington, 1946).

GEORGE PARKER WINSHIP, 'The Coronado Expedition, 1540–1542', Bureau of American Ethnology, *14th Annual Report*, part 1, 329–613 (Washington, 1896).

11. *The Pacific Coasts*

JUNIUS BIRD, 'The Cultural Sequence of the North Chilean Coast', *Handbook of South American Indians*, vol. 2, 587–94 (Washington, 1946).

ROBERT F. HEIZER, 'The Western Coast of North America', *Prehistoric Man in the New World*, Jennings and Norbeck, eds., 117–48 (Chicago, 1964).

12. *The Marginals*

JOHN M. COOPER, *Temporal Sequence and the Marginal Cultures* (Washington, 1941).

P. EHRENREICH, 'Die Mythen und Legenden der Südamerikanischen Urvölker und ihre Beziehungen zu denen Nordamerikas und der Alten Welt', *Zeitschrift für Ethnologie*, vol. 37, supplement (1905).

JESSE D. JENNINGS, 'The Desert West', *Prehistoric Man in the New World*, Jennings and Norbeck, eds., 149–74 (Chicago, 1964).

ROBERT H. LOWIE, 'Eastern Brazil: An Introduction', *Handbook of South American Indians*, vol. I, 381-97 (Washington, 1946).

ALFRED MÉTRAUX, 'Myths and Tales of the Matako Indians', *Ethnologiska Studier*, vol. 9, 1-127 (Göteborg, 1939).

ERLAND H. NORDENSKIOLD, *Origin of the Indian Civilizations in South America* (Göteborg, 1931).

JULIAN H. STEWARD, 'Basin-Plateau Aboriginal Sociopolitical Groups', Bureau of American Ethnology, *Bulletin*, 120 (Washington, 1938).

13. *The Arctic*

HENRY B. COLLINS, 'The Arctic and Subarctic', *Prehistoric Man in the New World*, Jennings and Norbeck, eds., 85-114 (Chicago, 1964).

RICHARD S. MACNEISH, 'Investigations in Southwest Yukon: Archaeological Excavation, Comparisons and Speculations', *Papers of the Peabody Foundation for Archaeology*, vol. 6, part 2 (Andover, 1964).

III. OCEANIA

1. General

DOUGLAS L. OLIVER, *The Pacific Islands*. Revised edition. Doubleday and Company, New York, 1961.

G. A. HIGHLAND, R. W. FORCE, A. HOWARD, M. KELLY, and Y. H. SINOTO, eds., *Polynesian Culture History, Essays in Honor of K. P. Emory*. B. P. Bishop Museum Special Publ. 56, Honolulu, 1967.

I. YAWATA, and Y. H. SINOTO, eds., *Prehistoric Culture in Oceania: Symposium Presented at the 11th Pacific Science Congress*. B. P. Bishop Museum Press, Honolulu, 1968.

2. Melanesian Prehistory

S. and R. BULMER, 'The Prehistory of the Australian New Guinea Highlands', *American Anthropologist*, vol. 66(4), part 2, 1964.

JOSÉ GARANGER, 'Recherches Archéologiques aux Nouvelles-Hebrides', *L'Homme*, 6:59-81, 1966.

R. C. GREEN, 'A Suggested Revision of the Fijian Sequence'. *Journal of the Polynesian Society*, 72:235-53. 1963.

3. West Polynesian Prehistory

A. G. BUIST, 'Field Survey in Savai'i, Western Samoa', *New Zealand Archaeological Association Newsletter*, 10:34-52, 1967.

J. M. DAVIDSON, 'Archaeology in Samoa and Tonga', *New Zealand Archaeological Newsletter*, 8:59-71, 1965.

R. C. GREEN, and J. M. DAVIDSON, 'Radiocarbon Dates for Western Samoa', *Journal of the Polynesian Society*, 74:63-9, 1965.

4. Central East Polynesian Prehistory

K. P. EMORY, *Stone Remains in the Society Islands*. B. P. Bishop Museum, Bulletin 116, 1933.

K. P. EMORY, and Y. H. SINOTO, 'Eastern Polynesian Burials at Maupiti', *Journal of the Polynesian Society*, 71:117-20, 1964.

R. C. GREEN, KAYE GREEN, R. A. RAPPAPORT, A. M. RAPPAPORT, J. M. DAVIDSON, *Archaeology on the Island of Mo'orea, French Polynesia*. Anthro. Papers of the American Museum of Natural History, 51, part 2, 1967.

R. C. SUGGS, *Archaeology of Nuku Hiva, Marquesas Islands, French Polynesia*. Anthro. Papers American Museum of Natural History 49, part 1, 1961.

Y. H. SINOTO, 'A Tentative Prehistoric Cultural Sequence in the Northern Marquesas Islands', *Journal of the Polynesian Society*, 75:287-303, 1966.

5. 'Marginal' East Polynesian Prehistory

ROGER DUFF, *The Moa-Hunter Period of Maori Culture* (2nd ed.), Wellington, 1956.

K. P. EMORY, W. J. BONK, and Y. H. SINOTO, *Hawaiian Archaeology: Fish-hooks*. Special Publication no. 47, B. P. Bishop Museum, Honolulu, 1959.

J. GOLSON, 'Thor Heyerdahl and the Prehistory of Easter Island', *Oceania*, 34:38-83, 1965.

J. GOLSON, and P. W. GATHERCOLE, 'The Last Decade in New Zealand Archaeology', *Antiquity*, 36:168-74, 71-8. (Reprinted in *New Zealand Archaeological Association Newsletter*, 9:4-18, 1966.), 1962.

R. C. GREEN, *A Review of the Prehistoric Sequence in the Auckland Province*. New Zealand Archaeological Association Publication 2, Auckland. 1963.

THOR HEYERDAHL, and E. N. FERDON, JR (eds.), *Reports of the Norwegian Archaeological Expedition to Easter Island and the East Pacific: Vol. 1—Archaeology of Easter Island, 1961, vol. 2—Miscellaneous Papers, 1965*. Monograph 24, parts 1 & 2 of School of American Research.

6. Linguistics and Prehistory

G. W. GRACE, 'The Linguistic Evidence' in 'Movement of the Malayo-Polynesians: 1500 B.C. to A.D. 500', *Current Anthropology*, 5:361-8, 1964.

R. C. GREEN, 'Linguistic Sub-grouping Within Polynesia: the Implications for Prehistoric Settlement', *Journal of the Polynesian Society*, 75:6-38, 1966.

S. A. WURM, 'Linguistics and the Prehistory of the South-western Pacific', *Journal of Pacific History*, 2:25-38, 1967.

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Names of persons are selected from the literary and visual arts, religion, science and technology.

Names omitted, apart from popes, rulers and politicians, are those mentioned briefly on one page only. Access to these names may be had by consulting the appropriate collective entries under place names and subject headings.

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